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A liberal price will be paid, in cash or subscriptions, for the following numbers of the ENGINEERING AND MINING JOURNAL :

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1874	XVIII.	4, 11.	1876	XX.	7, 12, 22, 23.

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CHARLES W. MOORE.

Mr. CHARLES W. MOORE, member of the American Institute of Mining Engineers, and President of the Dana Coal Company, was accidentally killed by falling down the shaft at Dana, Indiana, on the 8th ultimo, at the age of 37 years. Mr. MOORE was an engineer of considerable experience, and was creditably identified with many important works. As the engineer of the Dana Coal Company, which he organized, he distinguished himself by skill and perseverance in overcoming natural difficulties of considerable magnitude in sinking a shaft. Those who had the pleasure of his acquaintance regret his early loss as of a dear friend, an honorable man, and a skillful engineer.

THE BROOKFIELD, PA., MINE DISASTER.

The Brookfield Mine at Wheatland, Pa., recently completed a tunnel nearly a mile long, and procured a pony locomotive to haul their coal cars in and out of the mines. Efforts to use soft coal and coke as fuel on this locomotive proved abortive, and on the 11 thinst. an experiment with anthracite coal was tried. Three successful trips were made, but in the fourth the tunnel filled with gas, and a number of workmen were overcome by breathing it. Three men were taken out dead, and about twenty more or less injured, four of whom have since died. Subsequently eight persons from adjoining mines, under the impression that the persons were still in the tunnel, entered and were also overcome. The names of the dead are : John Jones, mine boss ; Robert Williams, Miles Davis, David Jenkins, Richard Jones, John Barter, John Young.

No doubt this frightful disaster will be recorded as an "accident," but in reality it is nothing but gross carelessness or ignorance. The use of locomotives underground is no new thing in the anthracite mines of Pennsylvania, and the necessity for a strong and special ventilation of the tunnels or gangways in which they run is thoroughly well known. The very fact that the use of coke had to be abandoned is sufficient evidence that there was insufficient ventilation in the tunnel, and the use of a deep fire-box—apparently made deep enough for coke or soft coal—if filled with anthracite, would sufficiently explain the cause of the "accident." The reports published in the daily papers state that the gas was sulphuric (sulphurous) acid gas, but it was undoubtedly mostly carbonic acid and carbonic oxide gases that suffocated the men.

We can see no excuse for this loss of life. Those in charge should have known the danger they were running, and they were even warned of it by the trouble they had experienced when burning coke.

CATASTROPHISM IN GEOLOGY.

Mr. CLARENCE KING'S address to the Sheffield School is an attack upon the Uniformitarians in geology, and an assertion of a certain sort of catastrophism, based upon evidences observed chiefly in the field with which he has been most familiar. We can scarcely do either him or ourselves justice in this brief notice of it, partly because of our limited space and time, but still more because his arguments are advanced confessedly without the detailed proofs—for which the public is referred to the forthcoming volumes (not yet forthcoming) of his report. Nevertheless, we cannot permit a discourse so interesting to pass without comment.

The address begins by describing the doctrine of catastrophism as the survival of a terrible memory of the human race—the memory, so far as we understand Mr. KING, of such great changes as the glacial period or extensive volcanic overflows produced. He thinks men nowadays are Catastrophists or Uniformitarians according to their temperaments, those who have imagination inclining to the former view. Orthodox catastrophism he defines as "the belief in recurrent, abrupt accelerations of the geologic rate of crust-change, so violent in their rapidity as to destroy all life on the globe," a view which he says "still counts among its soldiers a few of the cast-iron intellects of the present day." What "cast-iron intellects" may be, we do not know ; but we hardly think it fair to charge upon "orthodox" Catastrophists generally the view that each of the recurring cataclysms to which they hold, devastated the whole earth at once. The Uniformitarians, on the other hand, are represented by Mr. KING as denying that past geological changes have "necessarily been more rapidly accomplished than at the rate we witness to-day." This also, we conceive, is scarcely just. It is certainly not supported by the extract from Croll's *Climate and Time* which Mr. KING adduces, and which shows only that the Uniformitarians reject widespread convulsions of nature, and believe that the agencies now at work are those which have brought about all the changes of the past. But these changes may have wrought (and it is part of the Uniformitarian doctrine that they did work) with different force and rate at different periods. The more rain, the greater effects from floods ; the more heat, the greater effects from heat : there is nothing in this to contradict the Uniformitarian view.

Mr. KING says this school is "especially fond of objecting to catastrophes on account of the vast force necessitated ;" and replies to this objection, which he calls "singularly fallacious," in a manner little less than astounding, by the truism that "absolutely identical expenditures of energy are required to elevate a continent or depress an ocean basin given distances, whether the operation is instantaneous or infinitely slow." So the expenditures of energy are identical, whether Mr. KING carries a sardine-box in his knapsack to the top of Mount Whitney, or throws it up from the base before he starts ; yet a subsequent tourist, finding the box (minus the sardines, of course) on the summit, would not form a "singularly fallacious" judgment if he should conclude that it had been carried there, and not thrown up from the valley by a catastrophic operation. It is, in fact, Mr. KING who is guilty of a "singular fallacy" in supposing that time has nothing to do with the local development and transference of energy.

His own doctrine he announces as a modified catastrophism, embracing the propositions, first, that the rate of physical change progressing to-day in all departments of terrestrial action is inadequate to produce the grander features of American geological history ; secondly, that in the past, at intervals, the dynamic rate has been so sharply accelerated as to bring about exceptional results ; thirdly, that these results have been catastrophic in their effect on the life of America and the bounding oceans. The first of these propositions is, in its general form, not novel ; but the illustrations of it which the Pacific slope, particularly in its eruptive rocks and its deep cañons, presents, are very striking, and lose nothing of force under Mr. KING'S skillful handling. On the other hand, the argument which he bases upon the carboniferous strata of the West, and the "sudden" change of sediment from lime to "land detritus almost free from lime" observable in that series, as well as similar abrupt transitions noted in the other Western Palæozoic strata, seems to us anything but conclusive. It is worthy of notice here that Mr. KING concedes gradual changes to those regions to which he has given little or no personal study ; but wherever he goes in person, he finds traces of cataclysms. Is not this possibly an illustration of his own remark, that "men are born" into one or the other school ?

There are traces of this temperament also in his reference to the "Mediterranean Sea" of the Mesozoic age, which occupied the center of the continent, and which, he says, was a body of deep water, physically undisturbed by the great post-Palæozoic catastrophe, yet so affected nevertheless that the species of the coal period were completely killed off and new ones made their appearance. It is apparently Mr. KING'S idea that he can prove sudden changes to have taken place in the accumulating sediments at the bottom of the deep oceans. But this his "Mediterranean Sea" will not prove; on the contrary, it is far more consistent with the view of those geologists who refer the changes of sediments to changes of level, and who read sharp transitions between adjacent strata as the probable indications of intervals of time.

Of course Mr. KING may be holding back detailed proofs of such catastrophes as nobody can deny. He may also be preparing to give us some hints as to the nature of the processes which produced them, and to explain exactly what he means by "sudden." As the matter now stands, we do not think he has demonstrated a catastrophic basis adequate for the remarkable theory of the evolution of environment, which constitutes the latter part of his address.

"The successive hypotheses," says Mr. KING, "which form the chain of evolution are, first, the nebular hypothesis ; second, spontaneous generation ; third, natural selection." This statement is sweepingly incorrect, but as no further use is made of it, we may let it pass. And here we shall quote Mr. KING'S eloquent statement of his own view. He continues :

"It is only with the last that geology has intimate relation. The general theory of a derivative genesis, or the descent of all organisms by the various

modes of reproduction from one or a few primitive types which came into existence by spontaneous generation, was believed long before the Darwinian theory was advanced. Darwin's great contribution was the modus operandi of derivative genesis. It was a mode of accounting for the infinite branching out and differentiation of the complex forms of life from the primitive germs. His theory is Natural Selection, or the survival of the fittest, a doctrine which, left where Darwin leaves it, has its very roots in Uniformitarianism.

"Analyzed into its component parts, Natural Selection resolves, as is well known, into two laws, Hereditivity and Adaptivity; first, the power on the part of organisms to transmit to offspring their own complex structure down to the minutest details, and, secondly, the power by slight alterations on the part of all individuals to vary slightly in order to bring themselves into harmony with a changed environment. When we bring geology into contact with Darwinism, it is evident that Hereditivity is out of the domain of our inquiry; it is not the engine of change, it is the conservator of the past: but the companion law of Adaptivity, or the accommodation to circumstances, is one which depends half upon the organism and half upon the environment; half upon the vital interior, half upon the pressure which the environment brings to bear upon it. Now, environment, as conclusively shown by biologists, is a twofold thing, a series of complicated relationships with contemporaneous life, but besides, with the general inorganic surrounding, involving climate and position upon the globe. Preoccupied with the strictly biological environment, namely, the intricate relation of dependence of any species upon some of its surrounding species, biologists have signally failed to study the power and influence of the inorganic or geologic environment. The actual limits of the influence of physical conditions on life are practically unknown. In America, more than in Europe, this branch of inquiry has begun to attract notice, but it is yet in its swaddling clothes. It has lain little and weak from inanition, while the favorite child, Natural Selection, has been fed into a plethoric, overgrown monster. Darwin, Wallace, Haeckel, and the other devoted students of Natural Selection, have brought to light the most astonishingly complex struggle for existence everywhere progressing; the fiercest battle for life and for subsistence, for standing room, for breath. Species gain, others lose, some go down to annihilation. In this battle they see adequate cause for all the great, highly organized products of the millions of years since life began. From their logic, you and I are conquerors who have mounted to manhood by treading out the life of infinite generations. We are what we are because this brain and this body form the most effective fighting machine the dice-box of ages has thrown.

"From their conclusions and philosophy let us turn, but with no revolt of prejudice, no rebound of a happier intuition, for this is a question of science. Those who defend the stronghold of Natural Selection are impregnable to the assaults of feeling. They are dislodged only by the solid projectiles of fact, and to facts cast in the mold of nature they count it no dishonor to surrender. If, as I have said, the evolution and power of environment have been singularly neglected studies; if biologists have allowed the splendor of their achievements within the province of life to blind them to the working of that other and no less important side of the problem, what then is the general relation in time and space of the inorganic environment to life?

"Let us first acknowledge frankly that the present and latter part of the Quaternary period are Uniformitarian, and that the changes going on in organic life now do obey the great law of survival of the fittest, and that if the Uniformitarians were true in making of the past a mere infinite projection of the present, then the biologists would have based their theories on a solid foundation, and my protest would have no weight. Let us go further and cordially admit that in all periods of uniformity the progress of life would adjust itself to its surroundings, and the war of competitive extermination become the dominant engine of change and development. This is giving full credit to the greatness of the biological result, and simply asserts that they who achieved it are sound as far as the analogy of present uniformity may be permitted to go. But uniformity has not been the sole law; it has, as we have seen, been often broken by catastrophes—that is, by accelerated rate of change. Rapid physical change has been, it seems to me, the more important of the two conditions of the past, the one whose influence will at last prove to have been the dominant one in life-change.

"If the out-door facts of American geology shall be admitted to bear me out in my assertion of catastrophes, and if the epochs of maximum vital change do, as I hold, coincide with the epochs of catastrophes, then that coincidence should be directly determinable in the field. I confidently assert that no American geologist will be able to disprove the law that in the past every one of the great breaks in the column of life coincides with datum points of catastrophe. It remains to be determined how far this coincidence is the expression of environmental cause, responded to in terms of vital effect.

"From a comparison of the list and character of geological changes in America with those mysterious lines across which no species march, I feel warranted in harboring the belief that catastrophe was an integral part of the cause; changed life, the effect. Biology is accustomed to explain the cause of a great gap like that which divides Palæozoic and Mesozoic life by an admission that the Palæozoic forms ceased to live, but that the succeeding changed forms at the beginning of the Mesozoic were not the local progeny, greatly modified by catastrophic change, but merely immigrants from some other conveniently assumed country. They succeed in rendering this highly probable, if not certain, in many instances. But they are estopped from always advancing this migration theory. Greek art was fond of decorating the friezes of its sacred edifices with the spirited form of the horse. Times change; around the new temple of evolution the proudest ornament is that strange procession of fossil horse skeletons, among whose captivating splint-bones and general anatomy may be descried the profiles of Huxley and Marsh. Those two authorities, whose knowledge we may not dispute, assert that the American genealogy of the horse is the most perfect demonstrative proof of derivative genesis ever presented. Descent they consider proved, but the fossil jaws are utterly silent as to what the cause of the evolution may have been.

"I have studied the country from which these bones came, and am able to make this suggestive geological commentary. Between each two successive forms of the horse there was a catastrophe which seriously altered the climate and configuration of the whole region in which these animals lived. Huxley and Marsh assert that the bones prove descent. My own work proves that each new modification succeeded a catastrophe. And the almost universality of such coincidences is to my mind warrant for the anticipation that not very far in the future it may be seen that the evolution of environment has been the major cause of the evolution of life; that a mere Malthusian struggle was not the author and finisher of evolution; but that He, who brought to bear that mysterious energy we call life upon primeval matter, bestowed at the same time a power of development by change, arranging that the interaction of energy and matter which make up environment should, from time to time, burst in upon the current of life and sweep it onward and upward to ever higher and better manifestations. Moments of great catastrophe, thus translated into the language of life, become moments of creation, when out of plastic organisms something newer and nobler is called into being.

"Has environment, with all the catastrophic changes, been merely passive as regards life? It has either had no effect, or has restrained the progress of evolution, or has advanced it, or its influence has been as varied as its own history—now by the development of favoring conditions accelerating vital progress, now suddenly exterminating on a vast scale, again urging evolution forward, again leaving lapses of calm in which species took the matter into their own hands and worked out their own destiny. It is only through rapid movements of the crusts and sudden climatic changes, due either to terrestrial or cosmical causes, that environment can have seriously interfered with the evolution of life. These effects would, I conceive, be, first, extermination; secondly, destruction of the biological equilibrium, thus violating natural selection; and thirdly, rapid morphological change on the part of plastic species. When catastrophic change burst in upon the ages of uniformity, and sounded in the ear of every living thing the words 'change or die,' plasticity became the sole principle of salvation. Plasticity, then, is that quality which, in suddenly enforced physical change, is the key to survival and prosperity. And the survival of the plastic, that is of the rapidly and healthily modifiable during periods when terrestrial revolution offers to species the rigorous dilemma of prodigious change or certain death, is a widely different principle from the survival of the fittest in a general biological battle during terrestrial uniformity. In one case it is an accommodation between the individual organism and inorganic environment, in which the most yielding and plastic lives. In the other it is a Malthusian death struggle, in which only the victor survives. At the end of a period of Uniformitarian conditions, the Malthusian conqueror, being the fittest, would have won the prize of survival and ascendency. Suppose now an interval of accelerated change. At the end only the most plastic would have deviated from their late forms and reached the point of successful adaptation, which is survival in health. Whatever change takes place by natural selection in Uniformitarian ages, according to Darwin, advances by spontaneous, aimless sporting, and the survival of those varieties best adapted to surrounding conditions, and of these conditions the biological relations are by far the most important of all. By that means, and by that alone, it is asserted, species came into existence, and inferentially all the other forms from first to last. This is the gospel of chance."

We confess that we do not think Mr. KING is successful in maintaining at the same time the doctrine of fatal catastrophes and the doctrine of survival by "plasticity." When one of his catastrophes overtook the horses of HUXLEY and MARSH, did the plastic variety which survived already possess the peculiarity which distinguished the new species? If so, then the catastrophe did not produce the change; and it is a clear case of the survival of the fittest. If this peculiarity was not developed when the catastrophe occurred, then how could the potentiality called plasticity have any effect in preserving the variety? In short, what is "plasticity" as applied to organic types?

The idea that such a theory as this is any less a "gospel of chance" than the doctrine of Natural Selection, is the echo of a vulgar misconception of the Darwinian hypothesis, which is unworthy of Mr. KING. There is just as much "chance" in plasticity at there is in the struggle for life; and if plasticity could be defined and proved, it would merely take rank among those qualities of species which go to make up "fitness" and secure survival. But the toughest objection to Darwinism has always been the lack in all known species of that very plasticity which Mr. KING coolly assumes as the corner-stone of his theory. LAMARCK failed because species could not be proved plastic enough to alter through use and disuse of organs, etc., under changes of environment. Mr KING has but put forward a new Lamarckism, made still less tenable by the assumption that the "plastic" species change "suddenly," whatever that may mean (and the more it means the worse it is). With much respect for his great abilities and achievements, and gratitude for the light he has thrown and is throwing on purely geological problems, we must differ with Mr. KING as to the importance in biology of the new agency which he thinks he has found, and the new theory which he has compounded.

Nevertheless, as we have repeatedly said in these columns and elsewhere, the contribution which Western North America has to make to the science of dynamic geology is most important; and it certainly lies in the direction of demonstrating the occurrence of geological processes in former periods on a scale and with a force which the Uniformitarian school has not found it necessary to recognize in its study of British and European formations. As a strong statement of this fact, from thorough and acute personal observation, the address of Mr. KING is both timely and important.

NEW PUBLICATIONS.

The Geological Exploration of the Fortieth Parallel.

Two results of Mr. CLARENCE KING's labor have recently appeared—the sixth volume of the report of his survey and the address which he has just delivered before the Sheffield Scientific School at New Haven, and which we notice above. Although the former is from the hand of Prof. FERDINAND ZIRKEL, of Leipsic, it has received the editorial supervision of Mr. KING, and is doubtless in harmony with his views. Both this volume and the New Haven address are calculated to make the scientific public look with increased interest for the appearance of the other volumes of these reports, so long delayed.

Prof. ZIRKEL's report covers the Microscopical Petrography of the Survey, and forms a worthy companion to the researches of VOGELSANG, SORBY, and the distinguished author himself, who stands second to none as an authority on this subject. It is, very naturally, the crystalline rocks which chiefly engage the attention of the microscopist; and of these Prof. ZIRKEL has occupied himself chiefly with the eruptive rocks, upon the structure, constitution, and classification of which the microscope throws an indispensable light. The most interesting parts of the treatise to general readers are perhaps the descriptions of micro

lites and fluid inclusions in crystalline rocks. Many of these occurrences, heretofore ranked as rare, are shown to be very abundant in the rocks of the Fortieth Parallel. A series of handsome colored plates, showing the appearance of rock-sections under ordinary and polarized light, accompanies the text, and the specimens examined by Prof. ZIRKEL (who came to this country for the purpose) are referred to by numbers, which will be attached to the pieces themselves in the collections of the Survey, so that these observations may be separated at any time by other investigators. Mr. KING alludes in a foot-note to the "National Museum," where these collections are to be arranged. We trust this attractive phrase will prove more than a phrase, and that the fruit of much patient labor and study on the part of explorers in the government service will not be half thrown away for lack of means to make it thoroughly useful to students.

The text of Prof. ZIRKEL's report bears marks of translation into English from a German original. Some of these are blemishes. For instance, the word "passage-members" (p. 2) for intermediate or transition-forms (*Uebergangsglieder*, we suppose) is a blemish. So is the retention of the *d* in "microfeldsitic" and "feldsite" (p. 3), and all the less excusable since it is not even the correct German spelling. "Ledge-formed sections" (p. 4) is incomprehensible, unless as a typographical error for wedge-formed. We might cite a considerable number of words which are somewhat strange to English ears, and in which the influence of the German tongue is traceable. Mr. KING himself adds a foot-note to express his opinion that it is high time the "admirable word" *macroscopical* "gained a fixed place in American petrography"; and so we miss entirely from his page our old, old friend "the naked eye," to which, it used to be said, things are visible or invisible. Instead of that, we have their "macroscopical appearance," the naked eye being, as everybody should by this time know, nothing more nor less than a macroscope! We acquiesce, of course; indeed, we have had this word to eat in foreign literature for a good while, and rather like it, the only objections to it being its length and the liability to clerical and typographical errors in its use, arising from its close similarity to the more familiar term which is opposed to it in sense. But Mr. KING might have spared us the final syllable. *Macroscopic* would have been still more admirable.

NEW PROCESSES.

Staff Correspondence of the Engineering and Mining Journal.

The Davis process is now struggling upwards into the light, and, as usual, every man who has listened to the inventor and his explanations has admitted the correctness of his theories. Brett, it is now generally understood, has thrown up the sponge, but before his departure from the arena it is stated that he passed a favorable comment on the Davis system, so that the success of that discovery is now placed beyond the shadow of a doubt. We do not propose to discuss the merits of Mr. Davis's system at present, for in a few weeks more another entirely new and brilliant process is to be brought out by a gentleman from Montana, which, we are informed, will without doubt eclipse both the Brett and Davis plans. We will therefore reserve our commendations till then.

The subject is, however, an attractive one, and furnishes much food for reflection. During the last three years the West has produced a very vigorous crop of metallurgical ideas, some of which have enjoyed a most brilliant career. We all recollect the famous Stevens furnace, or rather "pot," a cast iron chamber shaped somewhat like a tea kettle. The ore and chemicals were put in at the top, the aperture bolted down air tight, and the fire built underneath. The company owning the patent, we believe, never produced a bar of metal, owing to the fact that an explosion occurred one day at the works, and the inventor, who happened to be standing by at the time, was never found again. This occurred in Salt Lake. The Mindeleff machine created a wild excitement in San Francisco about two years ago, but it has not been heard of lately. It was totally eclipsed by the Fryer apparatus, which consisted mainly of a false-bottomed iron cylinder with an anti-fume fountain at the top. Fryer made a noble race of it for a while, and undoubtedly drew better than any metallurgist of the age. Fortunately for the country, he was called suddenly to South America just at the time his works were announced as almost completed, and he has remained there—or somewhere else—ever since.

Any one who has given this theme a little study will have noticed the curious shapes selected by inventors during different stages of the process mania. In Stevens' time the globe was the style employed. All the patent processes were modeled on this figure. The object to be gained then was to inclose the ore in a strong case, and "give it heat." When it was found that this plan was accompanied with some difficulties, not to say dangers—owing to a curious tendency of expansion possessed by the metals, the model was gradually altered to a cylindrical form. To this latter class belonged the Fryer machine and the lightning amalgamator. Gradually the cylinder has developed into the tube as exemplified by Brett, and in the later devices, especially the one to which we referred above as originating in Montana, the tube plan has been cast aside completely, and a return made to the old-fashioned globe. But we shall be anticipating some rich developments by saying more.

Another new form of this mania has lately appeared. We refer to the "solution" idea. The number of patent liquors now being placed before the mining public is astonishing. Attempts are being made to pulverize, to roast, to smelt, and even to refine bullion with chemical solutions. Truly the inventive powers of the practical miner are wonderful.

While it cannot be said that as yet any of these processes have succeeded in the least degree, there is still no dearth of new claimants for metallurgical honors, and still as many more who are willing to commend every idea afloat so long as it presents a single feature that is beyond their comprehension. In fact, success does not appear to be demanded by the public. All that is called for is novelty. The majority of the people desire amusement. The few who put their money and time into the tests furnish nearly as much of that commodity as do the inventors. And so we are kept in good humor. So far as we have been able to see, this is all that has been accomplished as yet by process vendors.

IS PRECIOUS METAL MINING PROFITABLE?—I.

Staff Correspondence of the Engineering and Mining Journal.

In spite of the fact that the far West has been opened and developed almost wholly by the industry of gold and silver mining, this question is one which is frequently asked by people searching for investments outside of the old and well-recognized channels. And it is not an easy question to answer, for there is as yet but little known of the industry outside of mining centers. Twenty-five years of experience have taught us of the West many lessons, while the East has learned but little. We have made our ventures, have in many notable cases failed, have profited by the experience, and, starting anew, have succeeded; while people in the Atlantic States have seen nothing but the failures, and are skeptical of everything else. Yet the industry is one that will bear examination, and a careful comparison of its results with those of any of the so-called legitimate branches of investment will not be to its disadvantage. Throwing aside stock speculations of all kinds, whether in railroads, mines, banks, or manufacturing companies, let the industry be compared with agriculture, stock raising, merchandising, manufacturing—yes, and even with banking. It may seem a perilous undertaking to attempt to show any similitude on the score of safety with these established and well-recognized occupations, but the apparent difficulty is solely one of ignorance regarding the subject. No one in the East doubts for a moment the stability of the iron, coal, copper, or lead mining industries, yet each has been the grave of many millions of capital, foolishly invested, and when depression in trade occurs it is ascribed not to the intrinsic weakness of mining as a business, but to overproduction, strikes, tariffs, war, unwise investment, or some outside circumstance. If the same considerations were extended to precious metal mining, we should hear less talk about "veins being pulled out by the roots" or lodes "whose bottom had dropped out."

For a complete understanding of the subject by those who are looking into the industry as a channel of investment, it is necessary to examine somewhat into the nature of gold and silver mines, and to sketch roughly the plans and methods used in transforming the ore into bullion. This examination will demonstrate whether or not the industry may be classed with those we have mentioned. In other words, whether it presents a sufficient basis upon which to calculate with reasonable certainty for profit. After this, by looking into the results of mining in the West, taking into consideration first the entire industry and then such individual enterprises as may be open for test, we may prove or disprove our position in a manner that will be within the understanding of that class of men who never hesitate a second to take risks in ordinary commercial lines, but who pride themselves in utterly ignoring even the safest risks offered in mining.

First, then, as to the nature of gold and silver deposits.

Gold occurs in two ways—in veins and in alluvial or placer deposits. The veins vary in width from 6 inches to hundreds of feet. Their contents are wholly separate from the inclosing rock and entirely different in character. The metal is disseminated throughout the whole, so that it would be impossible to select a piece from within the walls that, under chemical test, would not show signs of gold. Invariably, however, there is one part of the vein which is richer than the rest. Sometimes this rich seam is of regular width and value. Sometimes it bulges out into great bodies of valuable mineral, and again shrinks down to a mere sheet. Again it disappears wholly for a time. A placer deposit is caused by water passing over or across gold-bearing rocks, by which the metal is carried down into the river channel and there deposited, until deep bars of auriferous gravel accumulate, often covering hundreds and thousands of acres. Silver is found wholly in veins. In some cases these are fissures, and are therefore unlimited in extent. In others they are gash veins or segregations, and are not reliable as to extent and continuity. Gold is also at times found in deposits of this nature.

This will cover the whole ground, and any enlargement of the subject would prove tedious and unnecessary. The gold is comparable in its nature to the farmer's acres, the merchant's stock, the manufacturer's produce, the banker's discounts. It may and will vary to some extent in quantity and productiveness; but so will the assets of the others. The drought, the army worm, and the grasshopper again and again destroy the entire year's labor of the farmer; fire, change of fashions, and decay frequently ruin the most substantial merchants; overproduction, competition, and changes in style, decrease of demand, improvements in machinery, and a dozen other causes annually prostrate hundreds of manufacturers; while war and panics periodically disorganize every channel of trade and shake the most solid financial institutions ever devised by man's ingenuity. These are facts patent to every one. Let the way of handling precious metal mines when in trouble be compared with the efforts made to support an established business or trade when its day of adversity comes. The embarrassed merchant or banker throws in all his ready means at the first note of alarm; he borrows, mortgages, strains his credit to the utmost. On the other hand, how many men or companies working mines that paid enormous dividends will show the same disposition when their vein passes temporarily into bad pay? It would be difficult to find a dozen instances in the entire West,

outside of the Comstock, where a hundred thousand dollars had been expended in the effort to bring an exhausted mine again into pay. Usually when the first balance sheet showing a deficit appears, the utmost consternation ensues. A majority of stockholders will instantly conclude that the "bottom has completely dropped out." The balance credit the superintendent with having "pulled the vein out by the roots," or agree that the limit of production has been reached.

Secondly, let an examination be made of the methods and systems employed in working ores of the precious metals. As in every other kind of work, there is a right and a wrong way. The outcrops of the vein should be carefully examined, and the most advantageous point selected for the shaft. In this matter, questions of drainage, grade, dump facilities, etc., are to be considered. Following this, a mine should be opened after a regular system, the hoisting and pumping accomplished economically, and the same care be displayed to systematize the labor that is the boast of the successful merchant. A haphazard system of mining will as seldom result in success as the same course applied to any other investment. If a careful business man will look into this, he will be surprised to find that the business of mining gold and silver may be subjected to the same rigid rules that are employed elsewhere, that there is no guess-work, no blind hunting after ore bodies, no experiments. Whether the workings show pay or not the shaft should be sunk steadily on exactly the same line; levels should be opened at regular intervals, and the plan; once laid out and adopted, followed with rigorous severity. It is exactly the same course pursued in other investments. No business man would think for a moment of abandoning the routine of his shop for some new idea every time trade slackened.

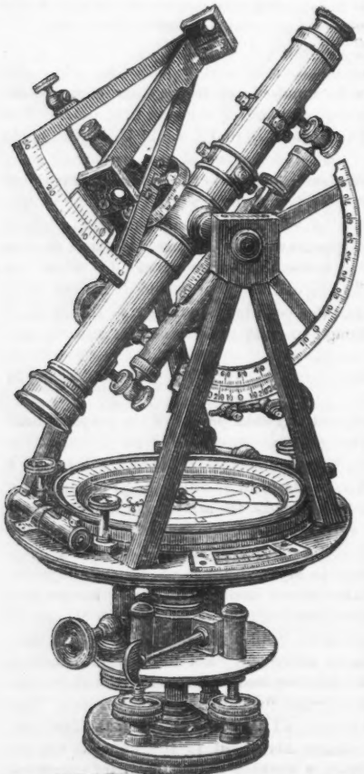
And yet, with but few exceptions, precious metal mining is carried on in a manner different from that in vogue in every other industry; and any intelligent and fair-minded critic must certainly see in this the cause of failure in the majority of cases. It must be an extraordinarily rich deposit that will stand up under a guess-work system of development, and yet there have been such.

But it is not intended to apologize for the failure of mining in the West: first, because there has been no failure; and, second, because the subject is one worn nearly threadbare. We desire to show that it is a legitimate channel for investment—not a lottery scheme; that it may, and to be successful must, be subjected to common business rules; and, finally, that there is no more chance than is to be met with ordinarily in other lines of investment.

The positive proof of this position is to be found in the records of the industry, which will be deferred to a succeeding article.

GURLEY'S ENGINEERS' INSTRUMENTS.

Messrs. W. & L. E. Gurley, of Troy, N. Y., have long been known as the most extensive manufacturers of engineers' instruments in this country. Their products have found a market in all parts of the civilized world, and their name has become a "household word" in engineering literature. We do not, therefore, propose to speak of their instruments in general, but of a few special features of interest in some of their newer styles.



Messrs. Gurley exhibited at the Centennial Exhibition a very beautiful transit made of aluminium, which attracted much attention. This is, we believe, the first use of aluminium for this purpose that has yet been made, and its lightness as compared with brass is certainly a notable advantage. Since it has been found that bearings of aluminium on aluminium are not durable, all the rubbing surfaces are made of hard brass. The cost of this beautiful instrument is about 50 per cent. more than those in brass.

One of the most important improvements of late years in engineers' instruments is the Burt solar attachment, shown in the accompanying cut, by means of which the engineer can determine his true meridian, latitude, and time with great accuracy, and with none of the trouble that accompanied these determinations by the old methods. The attachment can be put on any engineer's transit that is not made with a full circle vertical limb at a cost of $60, and as it can be readily removed when not required its advantages can be appreciated.

This attachment is essentially the solar apparatus of Burt placed upon the cross-bar of the ordinary transit, the polar axis only being directed above instead of below.

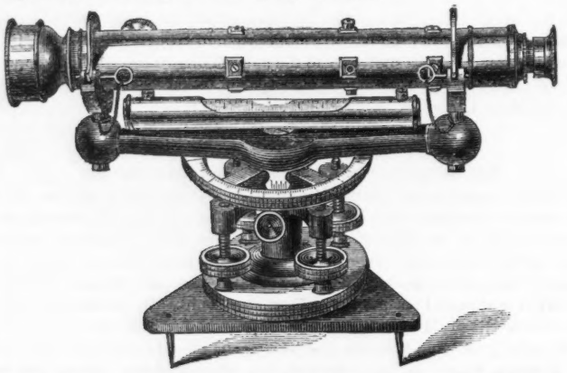
A circular disk is first securely screwed to the telescope axis. Upon a pivot in the center of this disk rests the enlarged base of the polar axis, firmly connected with the disk by four capstan head screws, passing from the under side of the disk, and thus adjusting the axis in any direction.

The hour circle surrounds the base of the polar axis, is figured from I. to XII., and is read to ten minutes of time by a small index fixed to the declination circle and moving with it.

A hollow socket fitted to the polar axis, and moving about it, furnishes by two expanded arms a firm support for the declination arc. The arc is from four to six inches radius, and is read by its vernier to either 30 seconds or 1 minute of arc. The declination arc has the usual lenses and silver plates, placed on two opposite blocks, like those of the ordinary solar compass. It has also a tangent screw for accurately laying off the declination. The latitude is set off by means of a vertical limb divided on silver, and reading to 30 seconds or 1 minute as desired. The vernier of the arc is furnished with a tangent screw for nice adjustment.

A transit to which the patent solar attachment is to be added must also have a level on telescope, clamp and tangent to axis, and an arc for measuring vertical angles.

The accuracy, convenience, and general value of this instrument are certified to by many of our most experienced engineers who have used them. In the States where the land is laid out in sections, this attachment becomes almost indispensable for an engineer's or surveyor's transit.



We illustrate also Gurley's architect's level, a little instrument which, from its low cost ($35), will certainly come into very general use. It is a Y level, 11 inches long, and, though not suited for very extensive and accurate work, is all that is required in ordinary operations about the mines and works.

CAN WE TRANSMIT POWER IN LARGE AMOUNT BY ELECTRICITY?

By N. S. Keith, 41 Liberty Street, New York.

ERRATA.

Second line of table on second column, p. 5, "Large magnet, 6,000 lb.," should read "60,000 lb."

On thirteenth line from end of article, for "I have no doubt that at least 2 *per cent.* of the energy expended on a magneto-electric or dynamo-electric machine at a waterfall may be used at a distance by an electro-magnetic motor as mechanical power," read "50 *per cent.*"

THE NORTH SHORE OF LAKE SUPERIOR AS A MINERAL BEARING DISTRICT.*

By W. M. Courtis, M. E., Wyandotte, Mich.

(*Concluded from page 4.*)

THE COUNTRY ROCKS.

The trap is diorite. The Macfarlane Band is a coarse-grained light green diorite. As this band contains some of the first known veins it was supposed to be *the* mineral producer, but later work makes this decidedly doubtful. 43·6 per cent. of this rock is insoluble.

The black slate has a specific gravity of 2·719, is fine grained, gives off no water on ignition, is barely fusible on the edges to brown glass, leaves a residue of 83·1 per cent. insoluble in acid.

The greenish gray slate has a specific gravity of 2·775, contains light green microscopic crystals, gives off much water on ignition, is quite fusible to a black glass, and in acid leaves but 53·4 per cent. of residue. This slate incloses lenticular masses of chert in the upper part of the bed of a red color, in lower part gray.

The dolomite between these slates contains bands of silver, and shows a trace of manganese, sometimes little pockets of anthracite where it joins the black slates. All the country rocks are more or less impregnated with iron and copper pyrites and galena even at a distance from the veins, mostly in microscopic crystals.

In 1866 the Thunder Bay Mine was located about five miles from Prince Arthur's. An English company spent some money in exploration and machinery, but with very little success. There was a splendid show of native silver on the surface, but it soon gave out. About 3,294 lb. were taken out worth

* A paper read before the American Institute of Mining Engineers, at the New York meeting, February, 1877.

$2,592, besides specimens, and possibly as much more was stolen. This mine was opened in 1874 again with about enough money to put it in working order. There being no money to carry on the explorations it was closed down again without result. There is a fine vein here that should be prospected by a shaft 1,000 feet deep if necessary, and perhaps some result would be obtained that would answer the question for the whole district.

Nature has most kindly aided the wild-cat speculator in this district, and he has not been slow to accept her proffered bounty. Attest a long list of mines with $1,000,000 to $2,000,000 in capital stock, one-fifth paid in mostly into pockets of the speculator. At the surface, small pockets of beautiful native silver ore are found furnishing specimens, and a few barrels of ore bringing $1,000 to $10,000, which enables the ring to get safely out. The stockholders then examine, find the pockets exhausted, sink perhaps one hundred feet in the barren ground, and retire in disgust on account of the slow progress and great cost of the work. The cherty slates are very difficult ground to work, and the large, barren vein is usually both wet and too soft to break well. With a fine party of nine miners, but 11 feet could be made per month in an 8 x 10 shaft. At the Duncan Mine an effort is being made to pass this barren belt in the hope that in a more favorable country rock the vein may prove productive. They have sunk 250 feet in the barren belt, and at that depth have passed, apparently, the hardest of the ground, and are now making quite rapid progress, with every indication that success will come soon, if the silver bodies are not entirely confined to the surface, which is not at all likely, especially as the minerals of the vein have gained slightly in silver, containing now about four ounces per ton in the mineral free of gangue. The Duncan Mine was discovered in 1867, and is one location of the Champion lode, an immense spar lode running nearly east and west with an almost vertical dip. On this same lode are the International, Caledonia, Ontario, Algoma, Dog Lake, Ontonagon, and North Shore. At the Duncan alone has any silver been found, except a very small amount contained in the galena or zincblende. Sulphide of silver has been reported at all the locations, but I have never seen any, and think the parties were deceived by films of other minerals on the spar.

The reason of this is that Duncan happens to be on high land, and has the hill capped with black slate, while the other locations are in the greenish slate, in which Duncan is practically barren. The International has probably some silver, as the black slates pass on to this property, but no explorations have been done in them. The value of all these locations depends on whether Duncan finds a second silver-bearing zone below the barren slates. All the reports that Duncan had struck silver below 70 feet were false, though Mr. McKellar gives two such reports. In January, 1877, however, plumbago was struck at a depth of 315 feet. As Silver Islet is rich only where the rock carries plumbago, and is somewhere between 316 and 330 feet below Duncan, the indications are certainly worthy of being followed up, and the chance of success is good.

The total value of ore produced to date at Duncan is about $15,000, and about $150,000 has been expended. The richest ore has assayed in bulk 2,020 ounces, the poorest concentrations 73 ounces; as about 60 tons are concentrated into one, the original stamp-rock is often pretty poor. In some parts, especially near the surface, the stamp-rock has assayed 6 to 8 ounces, taking out the whole rock for 6 to 12 feet wide. These rich places also gave some hundreds of pounds of very rich ore. Specimen 10 is the richest ore, 4 is stamp-rock, and 11 is the very rich argentiferous zincblende found only at the surface. Although large quantities of zincblende are found below 70 feet, it contains only a trace of silver.

In the winter of 1867 the government placed on all patented land on Lake Superior an annual tax of two cents per acre. This led the Montreal Mining Company to explore the lands located by Prof. Sheppard, and Mr. Thomas Macfarlane was placed in charge of the surveys. His first discovery was on Jarvis Island, about 22 miles south of Fort William. Some little work was done here, opening up a large spar vein. With the exception of some small lots of rich ore, nothing important was found. This property passed into the hands of the Silver Islet Company, and was by them sold for $150,000 to an English company. They spent considerable money in exploring the vein, but the little pockets of rich ore did not produce sufficient returns to warrant a continuance of the work. The difficulty with all the North Shore veins is that the ore is so uncertainly distributed in them, and they are so very large that a great deal of dead work can be done, and yet no bunches be found. At the Duncan the drift had passed within two feet on one side, and a stope a few inches on the other, taking out everything that looked like ore, yet an accidental blast in the pillar standing threw out $300 worth of rich ore, and succeeding blasts produced as much more in rich ore and stamp-rock.

Mr. Macfarlane next turned his attention to Wood's location on Thunder Cape. He accidentally went to the little rock, now called Silver Islet, to examine the diorite dike, and then discovered the silver vein that has given this district its interest.

There is no need of describing Silver Islet, as it has already been described by Mr. McDermott and others, in article above referred to. Mr. Macfarlane, unable to get the Canadians to raise the necessary money to carry on the work in spite of the fact that many thousand dollars' worth of ore had been taken out, succeeded in interesting parties from the States. These parties bought all the lands of the Montreal Mining Company, and a capital of $73,000 paid a dividend of $160,000 the first year, besides paying about $200,000 towards settlement with the Montreal Mining Company, and expending also a large amount of money to establish the plant.

In the report for this year we find that the total amount of dividends have been $622,666.66, and the total production $2,237,479.84. The great outlay was needed at the mine to establish a town on a barren rocky shore; to maintain a foothold on a little rock not 80 feet square against the mighty storms of Lake Superior; to furnish steam-stugs, engines, pumps; and build a mill capable of concentrating over 75 tons of rock per day.

Silver Islet stands to-day perfectly equipped for mining, concentrating, and smelting 50 to 100 tons of ore per day. It has immense tracks of land in a mineral district that have hardly been explored as yet. Its own vein has been explored only about 800 feet deep and 600 horizontally, with nearly $700,000 worth of property on hand and only $400,000 indebtedness. Yet to-day its stock is almost valueless. The cause of this has been failure to find a second pocket of ore in depth that promises returns. Small amounts of ore have been found by the drill at different depths. It is the present intention to push the deep shaft 400 feet deeper and explore to the southward, which is the supposed direction of the dip of the silver bodies.

The failure of Silver Islet to produce even expenses for the last two years has dampened the ardor of other mining companies, so that with the exception of very feeble efforts at other points, except Duncan, the results of whose development all interested are watching, there is no extensive mining being done. Specimen 13 shows the richest ore assaying 4,000 ounces to the ton, and No. 14 a poor piece of No. 2 ore interesting only in showing the gangue.

The average assay of all ore smelted from Silver Islet during the first three years was above 900 oz. per ton. It is difficult to come down from the meteoric splendor of Silver Islet to chronicle failures at other points, but such must be the case. I shall mention only those veins where some mining has been done.

In the summer of 1870 the Beck or Silver Harbor vein was found, on the west side of Thunder Bay. It is eight or ten feet wide, and differs from others in the amount of quartz in the gangue. The silver here was found in nuggets of sulphide and considerable zincblende. Fine buildings were put up and some mining done. For smelting 125 barrels were shipped, which, either through fraud or ignorance of the manager, was reported to be worth $300 per barrel, but which proved to assay $17 per ton. There is without doubt a large amount of ore at this mine that will pay for treatment when the owners have recovered from the shock of the first disappointment. Some miners from Silver Harbor discovered on the adjoining property a vein carrying native silver and nickelite in a small vein with many parallel fissures. Some few tons of very rich ore were taken out, probably about $10,000 worth in all at the highest figure. The average of this ore contained 4½ per cent. of nickel and some cobalt. These veins were in the Huronian talcose slates, which are very easy to explore, so that considerable work has been done. At about 140 feet the vein pinched out, and work was stopped, the capital being exhausted and the stock unassessable. I believe this property promises better than any other that I have seen. As the vein was small the rich ore was picked out clean, so I do not think the dumps are worth the cost of concentrating. The surface of this property has been but little explored. It is very probable that there are other surface pockets perhaps large enough to pay large returns. Not far from this location is a vein of milky quartz that carries native bismuth, and also shows a little silver on assay. This vein has been traced two miles, is about 2 feet wide, dipping about 40°. Nothing but a few shallow pits have been opened. The bismuth was at first taken for native silver, and a trial pit was put down twelve feet. A few kegs of bismuth specimens were taken out, and then the fact discovered that the metal was bismuth, and the amount of silver it contained was insufficient pay. But little of the vein is exposed and nearly all the specimens taken away. I succeeded in breaking off a few chips for assay, but have no specimen. The character of the vein is so promising that I have no doubt at some future day, when some one of the apparently barren veins has proved to be rich, this one will be exposed by drill or otherwise.

The vein on Pie Island, at the mouth of Thunder Bay, was opened in 1875 by a shaft 60 feet deep, and a small quantity of rich ore taken from a small stringer. The main vein carried galena and zincblende, very poor in silver, and no nickel, which metal had accompanied the rich native silver ore of the stringer. The vein action on this island has been very extensive, but as yet little exploration has been done. The work was stopped on account of financial difficulties. The fact that bricks estimated to contain 20 per cent. of silver were shown as products from the ore, but which proved to be very impure lead without any silver, throws discredit not on the mine, but the person in charge. Where there are so many promising veins, and it is so easy to obtain rich specimens, the temptation to "salt" has been great and has had its effect. The most famous swindle was the Tin of Otter Head. Here a vein was picked out, and then the fissure filled with artificial stone mixed with rich specimens and washed tin ore. The brook at convenient points was also well salted. Then the "childlike and bland" explorers carried a few barrels of specimens of a stuff they had found at Otter Head to different assayers, calling it iron ore. Its true character was soon discovered. Practical mining experts (so-called) were sent to look at it, and reported very favorably on the "find," explained perhaps by a big spree well planned. The capitalists took hold, and parties were sent out to locate lands. A gentleman in one of these parties detected the fraud, and the bubble burst. In 1872 and 1873 many specimens were sent for assay that proved exceedingly rich in gold and silver. Also others containing gold, silver, nickel, and cobalt in an ore, any one of the metals in large quantity. The first proved to be specimens from Jackfish Lake at Shebandowan, about 45 miles from the lake shore. Native gold was found, and Mr. McDermott first noticed the presence of sylvanite as one of the gold minerals. Although very rich hand-specimens are obtained, the ore in bulk is not very rich, but will probably give good working results. Almost all the pyrites from this district will contain a little gold, from a trace to $12, and some silver. The character of the ore can be seen from the specimens, though no native silver is to be seen.

Trouble with the Indians, whose title to the land had not been extinguished, prevented these mines being opened at the time, and dull times since have kept this district undeveloped. Last summer the first location was put in condition to be reported upon by stripping the vein for over a mile. Some fine specimens of native gold were found. The ore containing cobalt and nickel came from Heron Bay, where there is said to be a very promising vein. A little work was done, but trouble arose among the owners, so nothing more can be done until settlement. The specimen ore was certainly very rich, carrying about 1,000 ounces silver, one or two ounces gold, and nine or ten per cent. of cobalt and nickel. I understood the average was about $140 to the ton.

BLACK BAY.

The veins of Black Bay were discovered as early as 1865. They are mostly base metals, galena, and copper pyrites, and considerable heavy spar in the gangue. The Enterprise Mine has done a great deal of surface work, building a tramway to the Lake and putting up good buildings. On the vein there has been considerable work, but the result has been poor.

The vein at the surface was six to eight feet wide, the solid mineral band in it was three to four feet, but on sinking the mineral gave out, and the vein broke up into stringers. A shaft 100 feet was sunk last winter in the hopes of finding a continuation of the ore body, but without success so far as I can learn. An average of several tons of ore gave silver 10 2-10 ounces; gold, ½ ounce; copper, 1·89 per cent.; lead, 38 per cent. There are other veins here that produce large masses of galena nearly free from gangue.

The duty on lead and lead ores into the United States has prevented these mines from being worked by small companies, and the poverty of the ores in the precious metals and the uncertainty of the veins have prevented larger companies putting up the necessary furnaces.

Other veins have been found near Duluth that produce ore like Specimen 20, which, at first appearance, could easily be mistaken for rich ore. It contains but a few ounces of silver per ton, being galena and zincblende. At the Little Pic, at the east end of the Lake, Mr. McKellar has been opening a large vein during the past season, containing zincblende and galena. The ore as mined is poor in silver, the specimens assaying about $10. If these specimens are crushed and the galena washed out, it will assay about $100. There are streaks of galena in the vein that give this a higher assay. Ore from another vein at this point assays 32 ounces in bulk, but the washed galena will assay $300 per ton. Nothing but prospecting has yet been done.

The latest discoveries have been from Pigeon River, and very fine specimens of native silver have been shown as coming from there, and I believe it is really

a *bona fide* discovery. Some parties from St. Paul are opening a vein at this point, in which free gold as well as native silver is said to be found. From the specimens I have seen I should judge the silver occurred, as usual, in small stringers parallel to a large barren lode. I have no reliable information from this district.

There are several small forces at work on veins about Thunder Bay. In some veins no silver has been found; in others, merely specks; but all have some mineral, usually zincblende, and more often their value is based on the appearance of the spar or to the fact that they lie in the same belt of diorite as Silver Islet, called Macfarlane's band. Canada First, Cloud Bay, Angus Island, "17 K," belong to this class. They are working large barren spar veins in the hopes of striking a body of rich ore. The gangue of "17 K" bears the closest resemblance to Silver Islet, and, should they cut the diorite where it contains plumbago, I have no doubt will find very rich ore.

It is useless for any company to go to work with a capital of $20,000 to $50,000 on any of these veins, but a capital of ten times that amount might pass the barren belts into a second rich zone in depth. At present the existence of such a zone is merely a probable fact. The indications are that the veins themselves have never given out; that the band of mineral continues to the greatest known depth, impoverished in silver, it is true, but still carrying a few ounces, showing that the metal is not entirely wanting. Wherever the silver has given out, a corresponding change of country rock has taken place. The future of this district depends on the results of the deep explorations at Silver Islet and Duncan, and on the possible discovery of a surface deposit similar to that at Silver Islet.

IRON ORE.

There are many places on the North Shore where iron ore has been found in large quantities, especially in the western portion. The difficulty with all the deposits is the large amount of chert occurring with the ore in bands, or the ore itself is very silicious. Some of the purest specimens come from the foot of Thunder Bay. So long as the South Shore furnishes the immense quantity of pure ores as at present, it is not likely that capital will be attracted to these deposits.

Taken as a whole the history of this district has been such that capital is not attracted to it. All the mines started with the idea that they would pay from the start as Silver Islet did, and that, too, when ore must pay $150 per ton to get it into bullion, with no provision to treat anything of lower grade. Those that produced a few tons worth, perhaps, $200 or $300 per ton, were disappointed naturally in the result when half the proceeds went into expenses away from the mine. Silver Islet was very slow to realize it, though a dressing process was recommended when the first ore was smelted, and it was not until a pinch of the vein began to frighten the manager that the matter was taken in hand. Different amalgamation processes were tried, but without success. At this point Captain Frue, the superintendent of the Islet, perfected his vanner, which, for the character of the ore, was as perfect a machine for its simplicity as there is, and at a very small cost produces a product fit for smelting, containing 90 per cent., or more, of the value of the ore. I think this machine has fulfilled all the requirements of the case.

The problem was to concentrate an ore that contained only 1 to 3 per cent. of any metallic mineral, 0·2 per cent. at the most being native and sulphide of silver; the gangue being spar, quartz, and some diorite.

The waste rock from the richest part of the mine assayed about 40 ounces, but as the vein became poor the stamp-rock ran down to about 10 ounces, so that the process had to be cheap. The cost has proved to be less than $2 per ton, while the concentrations assay from 500 to 1,500 ounces per ton. The loss appears to be mostly in fine float mineral, also in comparatively large pieces of native silver, weighing several milligrams, that are carried over the belt with the waste.

The same machines are in use at Duncan, and save 90 per cent., as careful tests have shown.

Should new enterprises be undertaken in this district, they will begin where the older companies left off, and prepare to treat the poor rock first.

SPECIMENS TO ILLUSTRATE ARTICLE ON NORTH SHORE OF LAKE SUPERIOR MINING DISTRICT—LIST OF SPECIMENS EXHIBITED.

1. Chert,	Country rock,	Duncan.
2. Dolomite,	"	"
3. Trap,	"	"
4. Breccia, with silver,	Contact rock,	"
5. Pink calcite,	Gangue,	Silver Islet.
6. Amethyst calcite,	"	Duncan.
7. Fluorite,	"	"
8. Black slate,	Country rock,	"
9. Green slate,	"	"
10. Rich native,	Ore,	"
11. Argentiferous zincblende,	"	"
12. Rich ore,	"	Jarvis Island.
13. "	"	Silver Islet.
14. No. 2 ore,	"	" "
15. Quartz,	Gangue,	Silver Harbor.
16. Sulphide,	Ore,	" "
17. Native silver and nickelite,	"	3 A Mine.
18. Bismuth,	"	Bismuth Mine.
19. Gold ore,	"	Jackfish Lake.
20. Lead ore,	"	Near Duluth.
21 and 22. Ore,	"	Little Pic.

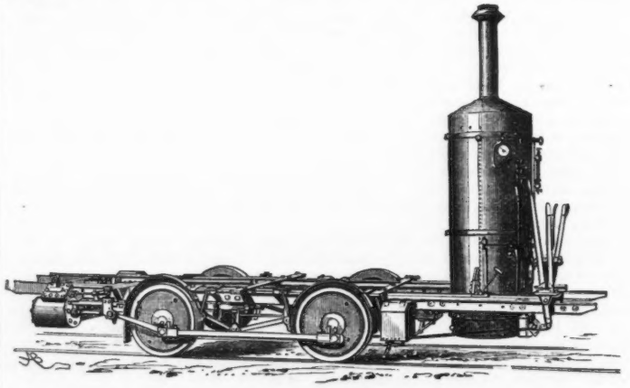
STEAM CARS ON STREET RAILWAYS.

The Baldwin Locomotive Works, of Philadelphia, have been very successful with their steam street cars in Philadelphia, Baltimore, and some other places. The advantages over horses are so apparent that they are likely to supersede the old method of locomotion.

The engines in use in Philadelphia are like the ordinary locomotive, the connecting rod on either side operating on the outside of the wheel by means of a crank-pin, instead of an inside crank-axle. The machinery was made complete in all its parts, so that it could be operated as a separate locomotive, before the car-body was placed upon it. Any one of the cars now in use can be taken off its wheels and placed directly upon the frame-work of such a locomotive, the only alteration required being as to the front platform, the place of which is chiefly occupied by the upright boiler and furnace. The direct support of the car-body is obtained by cross bars on the frame of the locomotive; but the set of the car-body is equalized by rubber springs, and it is said to ride smoothly without jar from the machinery. The car-body is held in position by three bolts on each side. More important than any other details of the machinery are, however, those which may concern the safety of human life. The capacity for quick stoppage is essential to this locomotive, since it is to be used in crowded streets. Therefore, the throttle-valve is placed close to the cylinders, so that both stopping and starting the engine are performed very promptly. A hand-brake is provided with sufficient power on one motion of a lever to stop the car in a few seconds. In addition, the engineer can reverse the engine. With these appliances the car can be stopped almost instantaneously. The boiler is of steel, double-riveted, and fully capable of carrying 300 pounds to the square inch. Only 90 pounds of pressure have been required on the heaviest grades of the Market Street line, they being 4½ to the hundred.

The trial of these motors on the line of the Citizens' Railway of Baltimore in the fall of 1876 was a very satisfactory proof of their efficiency on the difficult situations so often encountered on city roads. The Citizens' Railway has maximum grades of seven feet per hundred, or 369·6 feet per mile. The service required was that the motor should draw two loaded cars up this grade. The Baldwin Works constructed one machine, which was tried on the line, and was found fully capable of drawing one car, but with insufficient power for two. A

second motor was accordingly built, which weighed about 16,000 pounds, and which was sent to the Citizens' Railway in December, 1876, arriving there in the midst of the exceptionally severe snow storms. During ten days' trial, it fully demonstrated its capacity to do the work required. It ascended the 369-foot grade, drawing one loaded car, when the tracks were covered with mixed snow and dirt to a depth of eight to ten inches in places. Where four horses were required to draw an ordinary car, the motor ascended the grade, drawing a loaded car without difficulty. As a result of this trial, the President of the company wrote on December 22 as follows: "I have not tried it with two cars, but it has had a test sufficient to guarantee us in taking it, so far as climbing the hills is concerned. *It has gone up the grades with one hundred passengers on the worst day I have ever seen on our road.*" Subsequently the motor did its regular work, and drew two cars without difficulty up the grade named. On several occasions during the heavy snows of December and January, the motor was used to haul the sweeper for clearing the tracks, thus taking the place of from ten to fourteen horses, which were usually employed for the purpose.



We give below some statements showing the daily cost of operating cars on different horse-car routes in New York and Philadelphia and the daily cost of the steam cars, taken from a four weeks' service in Philadelphia:

HORSE CARS.

	Philadelphia.	Third ave., N. Y.	Broadway, N. Y.	Sixth ave., N. Y.
Feed, stabling, etc	$4 14	$2 87	$5 12	$5 90
Shoeing	54	54	66	66
Harness	18	65	11	13
Horses	1 15	77	85	1 16
Cars	40	40	78	75
Drivers	1 75	1 96	2 37	2 67
Interest	37	37	37	37
Totals	$8 53	$6 96	$10 26	$11 64

STEAM TRAMWAY.

Total cost of fuel, per day, at 8 pounds per mile, 88 miles run, at $4 per 2,240 pounds, for anthracite coal	$1 26
Oil, waste, and tallow, per day, estimated	25
Engineer, 16 hours per day, at 25c. per hour	4 00
Total cost	$5 51

Adding to the above figures an allowance of one dollar per day to cover depreciation and provide for future repairs, it is believed that the aggregate, $6.51, will represent fairly the cost of working a steam-car in the service described. Taking $9.35 as the average daily expense of running a two-horse car, and $6.51 of a steam-car, we have an enormous difference of over 30 per cent. in favor of the former.

It should be noted that in this comparison the steam-car is placed on the same basis as a horse-car. This is, of course, unfair to the former, as it has ample capacity to run at three or four times the speed of a horse-car, and on suburban lines, therefore, the economy of steam would increase very rapidly. One Philadelphia company, which works a suburban line with eleven horse-cars, has expressed the opinion that six steam cars would do the same service.

The steam street car most like the Baldwin, which has been tried in England, is the Grantham; its engine is in the front of the car, not separate. Operated on the Wantage Tramway it has cost 11 cents per car mile, but that railway has very steep and long gradients. The Merriweather locomotive, which is in active service on the street railways of Paris, France, is separate from the car. There is some dispute as to the satisfaction which it gives, but the bulk of evidence is in its favor. It is claimed that the Merriweather locomotive can be run at six cents per car mile, and a similar calculation is made for the Scott-Moncrief invention, in which the machinery is driven by compressed air instead of steam. General Imboden, of Richmond, proposes having the engine on a forward truck, the forward end of the car merely resting on the truck, and connected with it by a pin. In this arrangement one-half the weight of the car rests on the driving-wheels. The ordinary street horse cars could be used with very little alteration.

LECTURES ON MINING.—No. XLIV.

By Prof. W. W. Smyth, M. A., F. R. S., Royal School of Mines, London.

We come now to another part of the fittings of the shaft—that of the means adopted for bringing the mineral from the bottom of the shaft up to daylight. In certain mines this operation is entirely unnecessary; in certain hilly countries, as parts of South Wales, even collieries are worked without any necessity for shafts, except, perhaps, here and there for purposes of ventilation, the minerals being brought out by adit levels. But it becomes more and more rare every year that mines can be worked by this method, and it is seen that in some cases it is far better to undergo the expense and difficulty of sinking shafts where there would otherwise be too great a distance of underground conveyance. In the great majority of mines at the present day it is absolutely necessary that there should be shafts, and to the shafts all the mineral must come, whether it be the profitable mineral, or attle, or water; and the traffic thus set up in the shafts becomes a matter of very high importance. Our course is too brief to allow us to go at any length into the consideration of the engines employed. It is very interesting historically to look back on the successive steps by which the steam-engine has been introduced into the mines; and to see that before the time of Watt it was working in the mines, usually for the purpose of extracting the water, the water thus extracted being employed to raise the mineral. The wheel used was almost invariably of this character: constructed almost solely of wood, about a very strong wooden axis, generally made of a strong mass of oak; and then two sets of principal arms at right angles to each other, and embracing the main axle; add to these auxiliary arms, for the purpose of supporting the intermediate works, and you have the form of wheel largely used by Brindley, Smeaton, etc. The rim is from 10 to 12 inches wide, also of wood, having grooves cut in it for receiving the pieces of wood which form the boxes. Frequently there are two sets of boxes, inclined in the opposite direction, and according as the water is directed into one or the other set so will the wheel revolve in one or other direction. In such a wheel there is a large amount of material to be stopped and set in motion again at each reversal, and consequently a mechanical loss. Its convenience, however, speaks for it to a great extent, and it was universally employed for winding coals, even in the Newcastle district, up to within a half or three-quarters of a century ago, and it is also used in many mines now. The form more commonly employed now has the center formed of a couple of bosses of cast-iron, which bear a number of sockets for receiving the arms which support the circumference. The arms are usually formed of light wood, but sometimes are entirely of iron. For the rough purposes of mines, and where they are generally intended to be repaired by the mine smith, it is best to have the wheels made of a solid cast-iron boss, wooden arms, and the circumference of cast-iron segments, cast with little flanges, or recesses, in which the buckets can be fixed. The buckets have not unfrequently been made of sheet-iron, but in the mines it is preferred to have them of wood, that they may be readily repaired when necessary. [Much information on the whole subject of these wheels will be found in the papers of Mr. Fairbairn.] Particular curves and forms have been proposed for the sheet-iron buckets, which shall have the most suitable capacity for water, and retain it till the bucket gets to the lowest point, and means have been adopted for allowing the air which is carried in by water to escape. Usually in the mining wheels there is no necessity for this latter arrangement, since there is commonly a little leakage in the buckets, which answers the purpose; or if not a few little holes may be put in. Large wheels, of the breadth of 14 to 15 feet, may be seen in the Devon Great Consols Mine. All these cast axles, valuable as they are, are subject to the inconvenience, and sometimes great risk, due to the brittleness of the material, and this is especially inconvenient when they have to be sent out to great distances, packed in various ways; it is, therefore, important that they should be replaced by wrought-iron. Great losses and delays may be caused also by the breaking of one of these axles; wrought-iron axles, however, are very expensive things, though this is the only reason the lecturer knew of why they should not be employed. The finest water-wheel we have in England, as regards its height, is the great wheel of the Laxey Mine, in the Isle of Man, which has a diameter of 70 feet; the axle of this, narrow as it is (4 to 5 feet in breadth), was tendered for by the cheapest firm for £500. The size of wheel most generally employed is from 20 to 40 feet diameter, the breadth of the wheel varying according to the breadth of the stream. If there is a considerable head of water it may be more convenient, and decidedly more economical, to break it into shorter lengths than to use it in one fall, for when you get wheels 50 to 60 feet diameter they begin to be very expensive. Sheets of water falling from a considerable height are not likely to be very broad, and for mining purposes are suitable from about 2½ to 5 feet in breadth, 3 feet being by far the most usual. When we pass from overshot to breast wheels a much larger volume of water can be obtained, even for high breast wheels: undershot wheels come into play rarely in mining affairs, and then they may require wheels of 12 to 18 feet wide. Very long ago, before the end of the last century, it was proposed to employ a single instead of a double bucket wheel, and to keep the wheel continuously turning in one direction, and providing for the reversal of motion in the machinery by some simple arrangement of spur-wheels.

Another water machine should be noticed—the turbine: where a fall of 40, 50, or more feet of water occurs, instead of employing it on a water-wheel a turbine may be used. The turbine is known to every student of mechanical science as being a machine which in a very small space stores up a very great power: a machine going within a compass of 3 or 4 feet is capable of doing a great amount of work both for winding and for dressing apparatus. Formerly it was thought that overshot water-wheels were the best kind of water machine, giving in their best form 74 to 80 per cent. of useful work; of late years some turbines are stated to give as good a proportion as the best water-wheels.

Taking a whole series of mines, you find the drawing the mineral to the surface by manual labor is a matter of very serious expenditure, especially in two or three phases of mining. Underground in metalliferous mines it is far more frequent than it ought to be to see a number of windlasses in a row, just as you may see in the bell-pit working for iron ore. As soon as you see such a sight you may make up your mind there is something wrong: either the directors are hard up for money, and are pressing the agents to raise the ore which lies below, or there is some mismanagement on the part of the agents, not to wait till they are through another level, and to work the ore above them. In some countries, especially in the South of Europe, little is thought of employing one-third of the men engaged in the mine on windlass work. There may be special reasons for this in some cases, but as a general rule they should be replaced to a great extent. The system of hauling up the weight simply by the hand, like the hauling up of weights out of the hold of a ship, is almost unknown. The carrying of the material on the shoulders of men has been already referred to. The manner in which the weight is laid hold of by the machine employed is very different in different cases; perhaps the most common method amongst us is the single link iron chain, the chain weighing about 9 lb. per fathom, up to 14 or 15 lb. The use of this single link chain is combined with a good deal of risk to human life, as well as to the destruction of apparatus; still it is very largely used, partly on account of its packing into small compass. But where you purchase a chain ready made, and know nothing of the working of it, you cannot tell how much attention has been paid to the closing of the links, nor how far fracture is likely to take place. The risk is such a recognized fact that in the late Acts of Parliament it has been enacted that men are not to be raised or lowered by these single link chains. In the central districts for a long time past stiff or stump chains, made up of three or four links, with a strong piece of wood put through the links, and kept in place by two or three nails, have been used, such chains coiling on themselves without twisting or turning in the shaft. In these districts, where the habit of slow winding of great weights is in great vogue, the chains will weigh from 10 or 12 to 28 or 30 lb. per yard. A few years ago hempen ropes were very largely used in this country; for a time nothing else was employed, though the lecturer believed that the fibres of different plants were included under the general name hemp. Hemp is, comparatively speaking, a very expensive material, and requires to be employed with great economy and care, and to be looked carefully over at the time of purchasing, to see that it is of good quality, and that it has not been used in rope before. The ropes are usually of three strands, and generally tarred, in order that they may stand the alternations of wet and dry better. For very heavy work very large and expensive ropes have to be used. Before 1830 it had been proposed to use flat ropes, three or four of the ordinary round ropes placed side by side and sewed together, and among the advantages of such ropes may be noticed the steadiness with which they pass down the shaft, and their coiling themselves on a narrow drum; but the wear and tear is very great, and this item of expense very large. The lecturer had known one or two cases where the expense of the ropes had been the principal cause for the abandonment of a mine. In Mexico the Mexican aloe is employed for rope making, and a great deal is imported into Belgium and France for the same purpose: as a rule we may say that the thickness and breadth is larger for the same weight than with the hempen rope. All these materials proving so expensive, it was proposed in 1830 by a mining authority in the Hartz to employ iron wire in place of hemp, and this was done almost immediately with a large amount of success. It was soon introduced into Saxony and Hungary, but, strangely enough, in this iron producing country of ours it was introduced last, about the year 1840. A stand was made against it in the metalliferous mines, because of the easy manner in which such ropes are damaged in shafts not well prepared to receive them. The usual number of strands is six; sometimes hemp is put into the middle to fill up the spaces. In some early English ropes the wires were twisted too much, and this tended to break the rope. Flat iron wire-ropes have been used in our northern collieries with great success. About 1860 it was proposed that steel wire should be employed, from its great lightness enabling you to raise a greater amount of mineral from a given depth, and also to raise mineral from a greater depth than otherwise. Comparing iron wire with hempen ropes, there is the advantage in the first place of costing less, and of its lasting fully as long, in some instances longer. One cannot say that these advantages have fully established themselves with regard to steel, but in many instances it has served its purpose well. Whether it is that people do not like the look of a rope no thicker than your little finger, or whether it is that in so small a rope the abrasion of a small portion of it makes a very great difference, steel ropes have not made their way with great rapidity. Wherever they are employed it is necessary not to make the mistake of passing them over too small a pulley, or of wrapping them on too small a drum. And in passing down the shaft extra care must be taken where there is likely to be friction, the rock must be board d off with smooth boards, or kept off with pulleys, and when working on an inclined plane precaution should be taken that the ropes shall not be jerked off the pulley and drag on the plane. Where there is free drawing without guides, and the kibble has to be pulled into a side level, it must not rub on any sharp corner, and to avoid a twist and breakage it is best to have a small length of chain connecting the rope with the kibble. In the deep mines the weight of the rope is a serious matter, and it becomes a matter of question how far the weight can be reduced by the use of a different material, etc. If the lower part of the rope be strong enough to hold the kibble there is no necessity for it being as strong as the upper rope, which has to bear the weight of the kibble and also the rope below; hence much may be done by reducing the ropes as you go down.—*London Mining Journal.*

A NEW ENGINE OF WARFARE BY A WELSHMAN.—Mr. W. H. Lewis, of the Hafod, Swansea, has invented a new engine of warfare, which will be very likely to attract the attention of the War Office, as an appliance calculated to place its possessor in an advantageous position over an opponent. It consists of a cannon, so arranged as to discharge a sharp sword-blade crosswise in the direction of the enemy, the knife or cutter being so poised in its career through the air as to cover the whole space in a longitudinal direction described by the blade itself. An 8-inch ball would carry a sword 14 feet in length 600 yards, literally mowing down every human obstacle in its path. We have seen a model of the new engine, and can speak to its eminently destructive capacity, as it appears too obvious upon the face of it. In these days of endeavor to bring warfare to perfection as a destructive art, Mr. Lewis's invention is well worthy the attention of those to whom is intrusted the responsibility of protecting the country against enemies both at home and abroad.—*Western Mail.*

THE MINERAL RESOURCES OF UTAH.

By C. F. Allen, M. E.

During the past few years, while the Western States and Territories have been receiving considerable attention, to Utah has been awarded scarcely that which she deserves. That the whole Rocky Mountain belt abounds in valuable ores that will *well* pay for *judicious* working is an undisputed fact, but it is a matter of the first importance to capitalists that their investments should be made to the best advantage, and that they should select for utilization the best of the many opportunities which nature affords for the mining and working of the useful and precious metals. In regard to such natural advantages Utah claims *no second* rank.

Difficulty of treatment and distance from market of high grade ores seriously detract from their value, and such facts should receive due consideration in the fair estimation of distant and inaccessible regions of much reputed wealth. The ease of access to and egress from this territory and its mining camps, by means of railroads running through its valleys at the base of its mountains, and even far up in the cañons to the camps themselves, renders it profitable to treat even the low grade ores, and make such rich ores as are found approximate far towards their assay values.

The "Utah Central," and "Utah Southern" roads, together with four narrow gauges running to different mining centers, form, with the great Pacific lines, a direct and easy outlet for the Territory, while the extension of the "Denver Pacific" from Colorado and the completion of the great "Southern Pacific" (to be intersected by the "Utah Southern") will, at no distant day, afford two other routes and open up more thoroughly a vast and valuable country. Already the Southern road is pushing forward as fast as circumstances will warrant, and will do much towards directing attention to the great mineral resources of the South.

In addition to the mining interests may be mentioned those of agriculture and grazing. Irrigation turns the desert wastes into gardens, and the foot-hills and slopes of the mountains afford excellent pasturage for stock. These, found directly at home and in close proximity to the camps, will be at once recognized as great aids to a permanent mining region. Without dwelling further upon the subject at present, I think a few facts will reveal that Utah possesses most of the attractions of a new and not overloaded mining region, without the disadvantages which generally belong to many, if not all, such. Already settled throughout, it is not like a new region far from a base of supplies, while the restrictions against mining placed upon the Mormons has left the field still open and comparatively unexplored. Not but what much work has been done and many valuable mines opened, but that as yet but comparatively a small portion of the ground has been well explored and prospected. The ores of Utah are certainly of all kinds and descriptions, but by far the larger part of those already extracted may be regarded as argentiferous lead ores well adapted to smelting. This has hitherto been, and still is, the usual mode employed for the extraction of the metals, but at present considerable attention is being paid to milling and wet processes, which are eminently adapted to certain ores, and by which some of them heretofore smelted can be much more profitably worked.

Some of the earliest and, I believe, unsuccessful attempts made in smelting here were with the English reverberatory, but that seems now to be wholly superseded by the cupola blast-furnace, although in some cases, with nearly pure galena ores, it is a question if the change be for the better. For milling, where roasting is needed, the ordinary reverberatory, the Stetefeldt and Aiken furnaces are used, with somewhat varying but generally good results. For preparing sulphureted ores and mattes for the blast-furnace, roasting in open heaps is generally used, although the reverberatory and Bruckner furnaces are coming into favor. The stamping and amalgamation of free gold ores has heretofore been but little carried on, few deposits or veins of such material having been found, but in view of recent discoveries this branch promises to become of more importance in the future.

Placer mining has been carried on to but a limited extent in one or two places, and has never been a source of much revenue to the Territory.

In the line of iron and copper smelting little has been accomplished worthy of mention, and great bodies of these ores have yet to be utilized. When Utah's great coal deposits, of which there are an abundance, are more fully opened up, these industries will, no doubt, prove of great importance. Already people are turning their attention to the copper, and its extensive working bids fair to prove the next great step in the metallurgy of the Territory. Following that will come the conviction that the inexhaustible quantities of fine iron lying close to coal should not be allowed to remain unprofitable, and one by one will various other industries spring up, tuning to account the unlimited natural resources of the country. The earlier mining and metallurgical operations carried on by the Mormon settlers are scarcely worthy of notice, and it was not until the Gentiles, attracted by the reputed wealth, became interested that any extensive developments were made. Among the first to take hold were a number of English companies, who, on the whole, have met with but indifferent success. But many failures are to be ascribed more to extravagant management and to the idea that a mine was an inexhaustible treasure-house to be robbed indiscriminately, without regard to the future, than to any real fault of the mines themselves. In proof of this many a property, deemed of but little value, has, under efficient and judicious management, proved very profitable. And even the famous "Emma," which did so much to bring into notice and then throw discredit upon Utah, is still considered a fine property, and there are those who expect to see her yet surprise the country. It is now proposed to give some mention of the various mining camps and their productions, which, though necessarily brief, may serve to give an idea of the present state of the mining industry. The principal districts of the Territory are Bingham, Little Cottonwood, Tintic, Parley's Park, Leeds, Ophir, Dry Cañon, Stockton, American Fork, San Francisco, Beaver Lake, etc., etc.

BINGHAM,

lying about thirty miles to the southwest of the city, in the northeastern end of the Oquirrh Range, leads the van. A narrow-gauge railroad, leading from the "Utah Southern," runs up the cañon nearly to the town, and connects with a tramway which leads several miles farther directly to some of the principal mines.

Thus the cost of transportation is reduced to a minimum, and enabling the owest grade ores to be mined to advantage. The ore may be considered as generally of a low grade, but occurring in large deposits. It is principally a yellow and gray carbonate of lead, with more or less galena, averaging from 25 per cent. to 50 per cent. lead and from $15 to $100 in silver. The lowest grades are concentrated, and the richer shipped direct to the smelters. The principal mines lie in a line, and probably on one great mother vein, from which the others are but offshoots. The formation is of bedded quartzite, and the vein running northeast and southwest varies from several to 40 or more feet in width. Gangue mostly quartz.

This camp may be regarded as the principal lead region, and whose mines, although of low grade ore, are well developed and reliable. To give an account of all the mines and works would require more space than is permissible, hence a brief mention of the principal ones must suffice. First of these comes what is now known as the "Old Telegraph," and probably the most extensively worked mine in the Territory. This, composed of several different mines, whose workings have been connected, presents a network of shafts, levels, drifts, and winzes many miles in extent, and too numerous for description. The ore is being taken out at a tunnel driven to tap the lower workings. The mine employs about a hundred and twenty men, and ships about 60 tons of ore a day, averaging 45 per cent. Pb and 20 oz. Ag. Three air drills are in use, and others are to be added. The Old Telegraph Company, under the management of Prof. Holden, have secured a large amount of other property in the camp, and are showing how, by efficient and careful management, and by employing every possible advantage in the mining and handling, even the low grade ores may be profitably worked. They have been by far the largest producers within the past six months, and have shipped in the last eighteen months nearly 30,000 tons. Here, as in all these large bodies of carbonate ore, extensive and careful timbering is an absolute necessity, and a constant and heavy source of expense.

Next, and probably in the same vein, comes the "Revere," opened by an incline 650 feet deep, from which, every one hundred feet, levels are driven. In all of them large bodies of dry carbonate ore are reported. The regular force of 45 men extract daily 15 tons of first-class ore (53 per cent. Pb and 20 oz. Ag) and 30 tons of second-class. The latter is concentrated, at works a mile and a half distant, to 10 tons, yielding 50 per cent. lead and 30 oz. in silver.

The "Spanish," also lying in the same belt, is another mine which has yielded extensively, chiefly of low grade, however. It is estimated that 60,000 tons have been extracted from it, and yet much ore remains above the water line. The workings are four miles in extent, and several hundred feet in depth. The daily product is 65 tons of concentrating ore, which are reduced to 13, giving 50 to 60 per cent. lead and 15 to 18 oz. in silver. The method employed is jigging, in which the ore and sieve are moved up and down in the water, and of course are *not* self-discharging. Of the eight jigs employed, half are run by a water-wheel and the rest by hand.

The "Vulcan," worked by a tunnel, has a large body of carbonate ore, yielding 33 per cent. lead and 30 oz. in silver. The gangue is a honeycomb quartz, and easily separated from the ore. For this purpose a ten stamp mill and concentrating works, capable of handling 25 or 30 tons, is to be erected. This, as well as several other mines owned by the Glasgow Company, is being steadily worked. The "Miller," "Bully Boy," and others have smaller veins, a few feet in width, but which contain a higher grade of silver and lead ore. A large number of mines produce a low grade ore, from 15 to 30 per cent. lead and 5 to 15 oz. in silver, well adapted for concentration. What is being done in that line is generally of a crude nature.

In addition to those mentioned are the "Ten Forty," "Live Pine," "Neptune and Kempton," "Ashland," "Miner's Dream," and numerous others, all of which are producing considerable ore. In addition to the lead are more or less copper and chloride ores. In Bingham are almost the only placer diggings now worked in the Territory. They turn out about $4,000 per month. Recent discoveries show large veins of a gold bearing pyrites which will prove of much importance.

Bingham shipped during the month of May 3,764 tons of ore, which is a considerable falling off from the shipments of the previous months. In view of the recent decline in lead, which is particularly felt in this camp, many of the mines have shut down or greatly reduced their outputs. The bulk of the smelting ores in the northern sections are sent to the sampling mills at Sandy, where a careful sample is made by hand, every fifth, eighth, or tenth sack being opened, according to the value of the ore. This sample is assayed by the custom assayers in Salt Lake City, and upon their certificates bids are made by the different ore buyers and smelters. The price varies according to the market, but a close competition insures pretty steady and fair ones. The following is the state of the market at present, June, 1877, but which is much lower than a short time since, when the standard was 35 per cent. lead. Smaller lots and contracts vary more or less from it, is report, as a matter of course:

Argentiferous Lead (*Base Bullion*).—$35 to $70 per ton for lead. $1.20 per oz. for silver. $20 per oz. for gold.

The above quotation for silver is based upon the silver contents in the lead of 80 to 120 oz. per ton of 2,000 lb.

Strictly nominal. No sales.

Argentiferous Lead Ores.—From $1 to $1.05 per oz. for the silver contained therein, based upon a standard of 40 per cent. lead, each unit above 40 per cent., 50 cents per unit added. And 75 cents per unit over 50 per cent.

Ores containing zinc: for each unit of zinc above 5 per cent., deduct the value of 1 oz. of silver.

Silver Ores containing little or no Lead.—Reno rates and 5 per cent.

Ores with a lime or ferruginous gangue subject to higher rates.

Copper, antimony, zinc, and iron pyrites objectionable in all the above ores.

Copper Ores.—Assaying 20 per cent. net assay, $1.15 per unit (or per cent.).
Assaying 25 per cent. net assay, $1.40 per unit (or per cent.).
Assaying 30 per cent. net assay, $1.55 per unit (or per cent.).
Assaying 35 per cent. net assay, $1.70 per unit (or per cent.).
Assaying 40 per cent. net assay, $1.85 per unit (or per cent.).
Assaying 45 per cent. net assay, $1.98 per unit (or per cent.).
Assaying 50 per cent. net assay, $2.10 per unit (or per cent.).
Per ton of 2,000 lb.

To obtain the net assay, 1 and 3-10 per cent. is deducted from the wet assay.

Refined lead is quoted in New York at 5·62½c. per lb. currency. Firm, strong. Refined copper, ingots, is quoted in New York at 19c. per lb. currency. Fine silver ores, 999 fine, at $1.17¾ per oz. gold.

Gold, $1.05¼.

Silver in London 53¼d. per oz. standard, *i.e.* 925 fine.

THE COTTONWOODS.

The *Cottonwoods* are probably the best known of the Utah districts. They lie some thirty miles to the southeast, high up on the Wahsatch Range. A narrow gauge railroad—the "Wahsatch & Jordan," leading to the smelters at Sandy—runs several miles up Little Cottonwood Cañon, where it connects with a tramway leading up to the mines at Alta. It is here that is situated the "Emma," which served so much to bring Utah into notice. All are familiar with the story of its great value, its sale to the English company, and the subsequent stoppage and litigation. Little or no prospecting has been done outside the large bodies first found, and, in spite of the great cave which occurred in the largest chamber after the bulk of the ore had been removed, it is confidently believed that farther developments will prove it a valuable mine. Several million dollars' worth of ore has been taken from the mine in all, and some of very rich quality. Indeed,

there is considerable low grade or concentrating ore yet in sight, and upon this work is to be resumed while further developments are made. The concentration, which is performed in crude jigs, chiefly by hand, yields a good product of 50 to 60 per cent. Pb and 125 oz. Ag. Like most of the other mines, the ore occurs in the limestone in large pockets. It is chiefly a carbonate, with iron, lime, and silica as gangue, and some little copper.

A short distance from the "Emma" is the "*Flagstaff*," the heaviest producer in the camp, also the property of an English company. Under the present able management it has been put in good condition, and is turning out much valuable ore, greatly prized by the smelter on account of the iron it contains. Like the Emma it lies in limestone, and produces carbonate ores, which now average 45 per cent. lead and 30-odd oz. in silver. Certain portions yield an excellent iron ore, carrying considerable lead and silver. The mine employs a hundred men, and yields 60 tons of ore per diem. The workings are down six hundred feet, and comprise many hundred feet of levels, which still present a large showing of ore.

From the mine a long automatic incline carries the ore down the mountain to the ore house, from whence it is hauled in teams to the tramway. The incline is to be extended and further handling avoided. The *Vallejo* lies close by, and ships about a hundred tons a month. They have one of Halliday's wire tramways, the only one in the Territory, which carries the ore nearly half a mile to the town. Of late it has not been used.

Further down the mountain is the Bay City tunnel, already in 1,700 feet, and intended to cut the mines already mentioned as well as the "North" and "South" Stars. Five other tunnels, now idle, will, it is believed, cut these veins if pushed ahead.

The "Reed & Benson," employing forty men, the "Lavinia," thirty-five, are, together with the "Emily," "Wellington" and others, constantly shipping ore, mostly sulphide and carbonate of lead valued from $40 to $200 per ton. Just over the divide in Big Cottonwood is the "Prince of Wales," the most extensively worked mine of the district. The workings are down over a thousand feet and are five miles in extent. A tramway 1,800 feet long is used to carry the ore to the divide, from whence it is teamed to the tramway at Alta. This is one of the few mines using machine drills, three of which are employed. The daily output is twenty tons of ore, running 50 per cent. lead and 175 oz. silver.

During the month of May Alta shipped 25,000 tons to the smelters, showing also a decrease over the previous months. After a quiet winter, owing to its great height and snow-bound position, the camp is beginning to enliven, work is being resumed on various properties for some time idle, and the prospects of a lively summer are good.

TO BE CONTINUED.

RESEARCHES ON THE CARBON OF WHITE CAST IRON.

By P. Schutzenburger and A. Bourgois.

Translated from the *Comptes Rendu* of 1875, for the ENGINEERING AND MINING JOURNAL, by Chief Engineer Isherwood, United States Navy.

Many physiologists admit that the carbon set free during the decomposition of carbonic acid by the green parts of plants under the influence of solar light unites in the nascent state with water to form a hydrate of carbon, and that from this primordial hydrate the numerous organic compounds elaborated by vegetables are obtained through ulterior transformations.

This theory would have a solid support could the carbon of a compound be isolated by a reaction at low temperature, and thus actually exhibit the formation of a hydrate of carbon. But up to the present only metallic carburets —and notably cast iron—lend themselves to such attempts. Although it be not possible to liken the carbon of cast iron to that of carbonic acid, yet it seems interesting to seek under what form the carbon is eliminated from the carburet of iron when the action of a high temperature is avoided.

In treating cast iron with iodine in presence of water, M. Eggertz has already obtained a carbonaceous residue which, when dried at 212° Fahrenheit, contained :

Carbon	59·69
Water	22·50
Iodine	16·00

In this case the nascent carbon evidently united with the water, but the simultaneous presence of iodine in the combination complicates the phenomena, and obscures the conclusions that might be drawn from them. To avoid that inconvenience we have operated in the following manner :

The cast iron, coarsely pulverized, is treated cold with a sufficient quantity of a solution of sulphate of copper, as in the case of the determination of carbon by the Ullgren process. The carboniferous copper which remains is washed and then treated cold with a moderately concentrated solution of perchloride of iron additioned with hydrochloric acid. In this solution the copper rapidly dissolves, leaving a pulverulent matter—brownish-black and but little bulky—which, after being properly washed with water and dried at 212° Fahrenheit, gave on analysis :

Carbon	64·00
Water	26·10
Silicious ash	8·10
Undetermined matter	1·80
	100·00

1543·316 troy grains of the same cast iron furnished by our method 110·1156 troy grains of dry black residue (mean of six analyses, of which four gave 110·1928 troy grains, and two gave 109·8841 grains).

The weight of crystallized graphite was found equal to 1·2 per centum of the carbonaceous residue, and the dosage of the combined carbon by Boussingault's process led to 63·1 per centum of carbon in the same residue. The sum of the graphite and of the combined carbon is 64·3, a number very near 64·0 given by combustion. It can then be admitted that, deduction being made of the silicium and of some impurities whose weight does not exceed 1·8 per centum, the carbonaceous residue is a hydrate of carbon having the following composition :

$$C_{22} : 3H_2O.$$

This proportion between the carbon and the combined water is constant in the products furnished by different white cast irons ; it is also that of the iodine compound of Eggertz. This product or graphitic hydrate belongs to the series of Brodie's graphitic acid ($C_{22}H_4O_{10}$ or $Gr_4H_4O_5$) as well as to the hydrographitic oxide of M. Berthelot.* Heated to a temperature of 482° Farenheit, it loses the water suddenly with intumescence. Ordinary nitric acid with heat attacks it energetically, and transforms it integrally with disengagement of vapors into a reddish brown amorphous substance, soluble in nitric acid, in alcohol, and in ammonia ; soluble also in pure water, but precipitable by the addition of neutral salts. The ammonical solution from which the excess of ammonia has been expelled by ebullition precipitates by metallic salts some compounds of a clear brown color.

This body gave on analysis:

	I.	II.
Carbon	52·13	52·41
Hydrogen	3·47	3·58
Nitrogen	2·76	3·58

Heated in a tube it decomposes and disengages a strong prussic odor, leaving a black residue which azotic acid transforms into a reddish brown product.

The preceding numbers lead to the formula

$$C_{44}H_{17}(AzO_2)O_{22} \text{ or } Gr_8H_{17}(AzO_2)O_{11}.*$$

We thought ourselves able to base on these facts a very simple and rapid method of dosage for the combined carbon, and for the graphite in cast-iron.

In fact, the nitric solution of the graphitic hydrate being evaporated to dryness in the wet bath (*bain marie*), and the residue being taken up by alcohol, we dissolve the nitro-graphitic acid, and there remains a crystallized mixture of silica and graphite.

* We remember M. Brodie supposes that, in the derivatives of the graphite, the carbon exists with the atomic weight 33 = Gr, $Gr_4 = C_8$. This atomic weight is in harmony with the specific weight of the graphite.

* This body, which we propose to name nitro-graphitic acid, should be identical with the red substance that is formed according to Eggertz when cast-iron is attacked by nitric acid.

MINING NEWS.

Staff Correspondence of the Engineering and Mining Journal.

COLORADO.

Northern Mines.—The Briggs Mine is now sinking its shaft, which is 850 feet in depth, through a body of ore 19 feet in width. The display of mineral in this mine is finer now than at any previous time in its history. The shaft is to be sunk to a depth of 1,000 feet before a level is driven. The ore being taken out simply in doing this work is keeping the company's 75-stamp mill constantly in operation. The ore will mill about $9 per cord, besides which there is a heavy vein of smelting mineral which is selling for over $100 per ton.

The ore produced from the O.K. Mine last month averaged $400 per cord. This includes the smelting and milling grades.

New machinery for hoisting and pumping is being erected on the Gunnell. The mine has had a splendid record in the past, and will no doubt repeat it. It is in fact doing so.

The Central City tunnel is going ahead steadily at the rate of two feet per day, being at present in very tough rock.

The Bobtail is running 90 stamps, and turning out its usual quality of fine ore. The vein in places shows a width of 15 feet of pay rock.

The *Register* states that a new company has been formed on the English Kansas property, and that this mine, which has been a famous one, and which has been idle now for several years, is to be reopened. The 350-foot shaft will be sunk 200 feet deeper, and the mine will be put into working order for production. 400 feet on this property yielded 162,000 tons in 1871-2. The Kansas is without doubt one of the finest gold veins in Colorado, and, as it is being gradually placed in the hands of home management, its successful future is beyond a doubt.

The Golden Smelting Works are receiving all the ore they can handle, and more. This establishment will make a very handsome showing at the end of the year.

A tunnel is being driven under Red Elephant Mountain, to catch the Free America and other famous veins of that hill. They will be cut at a depth of 500 to 600 feet. The new mill of the Specie Payment Mine, at Idaho, is crushing away steadily, and saving about $30 per ton.

The Burleigh Tunnel at Georgetown is 2,175 feet in length, and advancing steadily towards the Phœnix and Coldstream, which veins are still some distance ahead of the breast.

The Pittsburg lode at Empire, one of the giant veins of that district, and one that has been neglected for too long a time past, is now under lease, and yielding smelting ore worth 13 ounces per ton, and mill dirt (six feet wide) worth about $10 per ton.

The Georgetown *Courier* reports that the Emma Mine has produced $7,000 in six weeks, with the labor of four men. The vein still shows rich ore.

The American Mine has just been fitted with a new hoisting engine, and will resume ore production. The superintendent of the property reports that the vein is looking better than ever in the lower levels. The working force is to be increased largely.

The consolidation of the Caribou and Native Silver properties, which has been decided upon, will exercise a very beneficial effect upon that camp, and result in one of the finest mining properties in the State. Caribou will this year be a higher camp than during any previous time in its history. Besides the two great mines, the Monitor, Spencer, No Name, Sherman, Idaho, and Boulder will be worked, and a large number of minor properties.

The last vein of ore cut in the Cowing Tunnel is 14 feet in width, and shows several fine streaks of telluride ore. It is being prospected to the right and left with good results. Stockholders in this property may well feel gratified with the results of their investment.

Central Colorado.—The Hiawatha is again in very fine pay, and yielding large quantities of ore.

The Hoyle is also doing finely, having struck again a rich body of mineral in one of its lower drifts.

The lower adit of the Champaign is showing a 12-inch vein of ore.

Work on the Mino Tunnel has ceased for the present, from the difficulty in getting timbers up the mountain to secure the mine. It is 45 feet long, and is 25 feet from the vein being run for.

Some rich ground has lately been struck in the Fairplay Gold Mine, which is yielding well. This property (placer) is one of the largest in the country, and has heretofore been regarded as a rather low grade body of gravel. Recent work has, however, opened a rich pay streak, and the main flume is being pushed ahead vigorously into the new ground.

At Montgomery, which has been deserted for many years, ever since the rich top dirt gave place to refractory iron, a great deal of work is being done. The Nova Zembla Mine, which has been reopened by Hathaway & Bergh, is showing finely, and is probably a permanent enterprise. The vein is being attacked at several points, each of which is producing a fair quality of smelting ore. The Chicago, a vein from which in the early days fully $300,000 in gold was taken from surface diggings, is being opened by an adit level. The Centennial, which

has been worked during the winter, has about 70 tons ready for shipment, and is showing very well in all its workings.

A new system of reduction has been recently tested at the Mallett works in Rosita, and has given much prospect of success. The ores are coarsely pulverized, then molded into bricks by the aid of a chemical solution, and burned in kilns. It is claimed that in this way a complete roast is accomplished at a very greatly reduced cost. The ore is subsequently leached. Mr. Mallett claims he can work $10 silver ores to a profit by this plan.

San Juan.—Green's Smelting Works are rapidly getting into order for work. The roofing of corrugated iron will be on in a few days, and the building of furnaces has begun. It is hoped that the establishment will be in running order by the first of August.

The Belle of the East and Belle of the West properties are both looking finely. In the latter a strike of four feet was lately made. In the former the ore is ranging in width from 14 to 16 inches.

The Van Gerson Lixiviation Works, which commenced reduction early in June, are reported as doing well.

It is rather remarkable how few of the investments that have been made in San Juan have failed. Perhaps the country is not old enough yet to show its failures, but the decided successes have been so many that one must look to other circumstances for the reasons of so much success. Undoubtedly a large number of the people who put money into the opening of San Juan mines and the erection of works advanced much more cautiously than did the capitalists who invested in early days in Northern Colorado, and had at their command a much more extended experience. We notice also that a number of those who have money in the country or are putting it in are on the ground managing its expenditure personally, and watching every day's operations. To these circumstances may undoubtedly be ascribed the high percentage of success in this wonderfully rich district. We believe, in fact we are quite sure, that no industry in the country can show a larger ratio of success than is shown at present by the operations in the San Juan country. And at the same time there are hundreds of other districts in the West doing equally well.

Burrows Park is to have a smelter. The mines around this camp are developing well, and are being opened with vigor. Among the prominent veins are the Del Norte (sunk 125 feet deep), the Lily, O. K., Buckeye, and Mary Anu.

From the *Silver World* of the 23d we extract the following notes regarding the mines around Lake City. Rich ore has been struck in the gray copper lode at 50 feet. The adit on the Boston will be driven another 100 feet.

The late discovery in the Susquehanna tunnel is proving to be very rich. The strike was made at 500 feet from the mouth, and ore was found from 12 to 18 inches in width, assaying well in silver. Drifts are being driven both ways, and about two tons daily are being produced. No stoping is yet being done. Meanwhile the tunnel has been driven ahead steadily, and is now 650 feet in length. The McGregor, Susquehanna, and Aspen are still ahead of the breast. In driving this tunnel a natural air shaft or course was struck at 600 feet, which ventilated the whole work thoroughly.

The Summit District is already showing up finely for the season. The production of quartz is to be larger than was expected even by residents.

NOTES.

SPANISH DUTY ON COAL.—According to the London *Times* the Spanish Budget Committee has approved a 15 per cent. ad valorem duty on foreign coals imported into Spain.

DECLINE IN THE PRICE OF BRITISH COAL.—The average value of the coal exported from Great Britain during the month of May in 1874, 1875, and 1876, was 13s. 6d. per ton, 11s. 1d. and 10s. respectively.

AS a carbon for electric light, M. Th. du Moncel forms a compressed mass of carbon and magnesia, which is very hard and burns without ash, giving a light which is steadier and 34 per cent. more intense than that of gas carbon.

A CURIOUS SILVER SPECIMEN.—Among the curiosities taken from a Nevada mine is a piece of sandstone with grass roots still clinging to it, and showing native silver all over its surface, petrified wood impregnated with ruby silver, and a mass of pure chloride of silver that will assay $8,000 to the ton.

RICH MINERAL DISCOVERY IN NEW HAMPSHIRE.—The New York *Times* of the 10th inst. contains a dispatch dated Boston, July 9, stating that an enormous lode of copper, lead, gold, and silver, 20 feet in width and extending for miles, has recently been discovered in Milan, New Hampshire. The lode crosses the Grand Trunk Railroad 100 miles west of Portland.

QUICK BORING.—A company has been formed to search for coal in Switzerland. A depth of 1,422 feet has been reached in two months by the borers, including the reboring of the upper 640 feet, from 3¼ inches to 7 inches in diameter. The highest speed was about 77 feet in 24 hours. No coal was found, the section showing 1,200 feet of Permian strata resting upon old crystalline rocks. A series of trials are to be made.

INDIA INK.—India ink of a deep black, giving neutral tints for half-shades, is very rare. It may be made as follows: Rub thoroughly together 8 parts lampblack, 64 parts water, and 4 parts finely pulverized indigo. Boil until most of the water is evaporated, then add 5 parts gum arabic, 2 parts glue, and 1 part extract of chickory. Boil the mass again till it is thickened to a paste, then shape it in wooden molds which are rubbed with olive or almond oil.

BRAZILIAN COAL.—Specimens of lignite and coal have been received from Brazil by the Paris Academy of Sciences. A specimen of bituminous schist from Bahia was found rich in gas, yielding a light-colored tar, which was, properly speaking, a mixture of several oils. The formation from which the specimen was taken covers an immense area, and lies but little below the soil. A sample of coal from Tiete, Sao Paulo, was found to contain only 1 per cent. ash, and to be otherwise of unexceptionable quality. The seam is half a yard thick at 100 feet from the surface.

CONDUCTIVITY OF METALS.—By experiment with reference to the heat conductivity of metals and paper, M. Aymonnet finds: (1) That metals and paper are not, as is generally thought, athermanous; (2) that they are more diathermanous for the obscure radiations from metallic bodies below the temperature of boiling water than for luminous calorific rays; (3) that their absorptive powers are more feeble than those of water; (4) that there is a mathematical relation between the absorbing power of a body and its coefficient of conductibility.

THE WORKING LADS' INSTITUTE.—This institute is the result of a movement inaugurated last autumn at the Mansion House, under the Presidency of the Lord Mayor, the object being to save the working lads of the metropolis from the dangers to which they are exposed during their evenings, and to provide wholesome reading, innocent recreation, and useful instruction. Already 250 lads have joined the institute, and the committee are anxious to establish others in different parts of London, but are hindered for want of funds. On the 11th ult. Mr. Phillip Brannon, C. E., read a paper on "Air Travel."

TEMPERATURE OF NEVADA SILVER MINES.—The following is the registration of temperatures taken in the Overman Mine on June 27, with self-registering thermometers, by drilling holes in the rock and placing the thermometers therein and plugging the holes up. The thermometers are left therein twenty-four hours:

	Degrees.		Degrees.
700-foot level, west of the vein.....	98	1,200-foot level, in the quartz.....	107
900-foot level, west of the vein.....	101	1,300-foot level, 65 feet west of vein..	98
1,100-foot level, 50 feet east of the vein	95	1,300-foot level, in the quartz.....	104
1,100-foot level, in quartz (very wet)..	97	1,400-foot level, 150 feet west of vein.	111
1,200-foot level, 60 feet west of vein..	99	1,400-foot level, in the quartz.....	115

—*Virginia City (Nev.) Enterprise.*

RELATIVE AGES OF THE SUN AND CERTAIN FIXED STARS.—Professor Kirkwood closes a communication upon this subject to the American Philosophical Society with the following summary of his conclusions: 1. The history of the solar system is comprised within twenty or thirty millions of years. 2. From the fact that the larger component of Alpha Centauri radiates twice as much light as the sun, while the mass of the former is *less* than that of the latter, we infer the probability that our solar system is the more advanced in its physical history. 3. 61 Cygni seems to have reached a greater degree of condensation than the sun, since, on the hypothesis of equal destiny, the surface of the larger member is one-third that of the sun, while the intrinsic light is less than one-ninth. 4. The companion of Sirius appears to have reached a stage of greater maturity than the sun, while the contrary seems to be true in regard to the principal star.—*American Journal of Science and Arts.*

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the natural and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates.

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

Assay for Gold	$2 00	Assay for Lead	$1 50
" Silver	1 50	" Zinc	3 00
" Gold and silver	2 50	Control Assays	3 00
" Copper	2 00	Zinc Analyses	5 00

Where reply by letter is desired, an additional charge of 50 cents should be inclosed.

Postage or expressage on samples must always be prepaid.

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ENGINEERING AND MINING JOURNAL,
Denver, Colorado.

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ENGINEERING AND MINING JOURNAL,
(P. O. Box 4404.) 27 Park Place, New York.

ANSWERS.

Denver Office:

SAMPLES.

92. E. L. HORN, Colorado Springs, Colo.—Hematite probably contains no gold or silver. Will assay it if you order, but hardly think it worth the cost.

93. J. M. P., Spanish Bar.—A greenish quartz filled with mica scales; no value. The black crystal sent is not yet determined.

94. F. F. SMITH, Springdale.—Your ore showed a trace of molybdenum, probably the sulphide. In case you find any samples of a yellow mineral in the same locality, would be glad to have you send some to us. The sulphide of molybdenum occurs in considerable abundance in the vicinity of Empire, Colo., and is very pure. It is a soft lead black mineral, easily cut by the knife, and almost malleable. The oxide is a straw-yellow ore, also quite soft, but showing more crystallization than the sulphide. It cannot be cut by the knife, either. There is one other molybdenum mineral which it might be well to look after, as follows: Wulfenite, molybdate of lead; quite heavy; color yellow, and often orange to bright red; brittle. This metal and its minerals is often associated with silver, and sometimes with gold.

95. EDWIN F. CARUTHERS, Salt Lake.—The sample contained bismuth, lead, copper, silver, and quartz (see analysis below). It is, perhaps, similar to or the same as the schirmerite found at Geneva in Colorado, in the Treasure Vault Mine. As the ore was crushed, we could obtain no pure mineral. If possible, send a clean and unbroken sample. If the ore exists in large quantities and is easily accessible, the bismuth can perhaps be made of commercial value. Silver is likely to be found in abundance.

96. EDWARD CROSS, Santa Fe.—The pyrites sent did not contain any trace of nickel or cobalt. It showed about $2 per ton in gold.

ASSAYS AND ANALYSES.

97. P., Virginia Canon.—1. Silver, $2.75; gold, trace. 2. Silver, $4.

98. J. A., Democrat Mt.—Gold, $51.68; silver, $12.60;

99. F., Denver.—Gold, $4.12; silver, $94.50.

100. E. F. C., Salt Lake.—Analysis: Bismuth, 37·10 per cent.; lead, 4·68 per cent.; copper, 8·15 per cent.; silica, 25·42 per cent.; sulphur, 19·81 per cent.; silver, 4·20 per cent.; total, 99·36 per cent.

101. J. M. W., Caribou.—silver, 58·65 oz.; gold, 0·20 oz.; lead, 10·50 per cent.

102. T. H., Rosita.—Silver, 38·85 oz.; gold, none.

103. C. W. S., Golden.—Copper, 18·75 per cent.; silver, 2·3 oz.

104. J. H. H., Georgetown.—Silver, 513 oz.; gold, none.

105. P. B., Georgetown.—Silver, trace; gold, trace.

106. H., Boulder City.—Gold, 4·55; silver, 1·25.

New York Office:

ASSAYS.

Erratum.—In answer XIX., for "*some* of which can be seen," read "*none* of which can be seen."

XXV. I. A. S., Wilkes-Barre.—Assay will be given next week.

XXVI. " Assays, silver, 5·58 oz.; gold, 13·46 oz. per ton (2,000 lb.).

XXVII. " Galena.—Silver, 1·25 oz.; gold, 0·3 oz.

XXVIII. I. D., New York.—Apparently magnesian limestone. Marked XI.—yields silver none.

XXIX. " Same ore. Specimen marked No. 2.—Silver, none.

XXX. " Same ore. Specimen marked "Elbow." Silver, none.

XXXI. " Will be given in next issue.

XXXII. L. H, New York.—Specimen is blende and copper pyrites and mica, principally blende.

XXXIII. L. H., New York.—Galena and quartz. Marked E. 5. Assays, silver, 1·95 oz.; gold, trace.

XXXIV. " Blende, copper pyrites, and quartz. Marked E. 6. Silver, 5·94 oz.; gold, 0·3 oz.

XXXV. " Galena, copper pyrites, in talc schist. Marked E. 7. Silver, 14·31 oz.; gold, trace.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending July 7, and years from Jan 1st.

Tons of 2,240 lb.	1877.		1876.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	35,992	1,137,721	52,152	920,256
D. L. & W. RR. Co.	47,787	1,154,305	22,024	651,512
Penn. Coal Co.	23,509	554,654	16,815	447,669
L. V. RR. Co.	24,399	513,671	8,371	440,353
P. & N. Y. RR. Co.	1,454	28,829	93	12,649
C. RR. of N. J.	19,309	791,140	5,854	556,368
Penn. Canal Co.	7,677	174,857	9,816	146,477
	160,127	4,355,177	115,125	3,175,284
Lehigh Region.				
L. V. RR. Co.	48,653	1,498,683	28,479	1,095,422
C. RR. of N. J.	23,019	764,915	11,878	542,996
D. H. & W. B. RR.	832	7,503	339	18,486
	72,504	2,271,101	40,696	1,656,904
Schuylkill Region.				
P. & R. R. RR. Co.	96,362	2,969,890	3,105	1,909,096
Shamokin & Lykens Val.	13,714	313,655	12,198	397,641
	110,076	3,283,545	15,303	2,306,737
Sullivan Region.				
Sul. & Erie RR. Co.	178	5,297	48	26,399
Total	342,885	9,915,120	171,172	7,165,324
Increase	171,713	2,749,796	....	....
Decrease	....	...	....	....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Receipts and shipments of coal at Chicago, Ill., for the week ending July 7, and year from January 1:

	Week. Tons.	Year. Tons.
Receipts	38,698	725,385
Shipments	5,908	100,695

The shipments of coal at Cleveland, Ohio, for the week ending July 7 were as follows: shipped coastwise, 8,191 tons; total for year, 101,914 tons; foreign shipments, 3,389 tons; total for year, 38,652. Total of coastwise and foreign shipments for week, 11,580; for year, 140,566.

Receipts of Coal at Boston, for the week ending July 6, and years from Jan. 1.

Tons of 2,240 lb.	1877.		1876.	
	Week.	Year.	Week.	Year.
From				
Alexandria and Georgetown	3,178	29,402	....	20,622
Philadelphia	17,605	284,487	8,811	229,684
Baltimore	4,992	64,084	7,232	65,581
Other places	7,414	140,926	5,863	132,675
Great Britain	....	1,249	110	3,916
Nova Scotia	1,814	7,797	467	5,873
Total	35,003	527,945	22,483	458,351

Shipments of coal at Pictou, N.S., for the week ending July 7, and year from January 1:

	Week.	Year
To Canada	3,145	10,271
" United States	1,300	9,491
" Other Provinces	1,997	16,024
Total tons	6,442	35,786

The Exports of Coal from Baltimore for the week ending July 6 were — tons, and since January 1st, 20,462 tons as against 17,450 tons for the corresponding period of 1876

Perth Amboy business:	Tons.
Received for the week	24,404
Shipped for the week	21,881
On hand July 7	131,349

The Receipts of Coal at Rondout, N. Y., by the Delaware & Hudson Canal for the week ending July 11 were 284 boats, carrying 36,031 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Piedmont Railroads amounts to 58,532 tons, as compared with the corresponding period in 1876.

Belvidere Delaware RR. report for week ending July 7	Week	Year. 1877.	Year. 1876.
Coal for shipment at Coal Port (Trenton)	....	10,937	105,716
" " " South Amboy	9,385	326,756	208,618
Coal for distribution	1,712	87,364	70,026
Coal for Company's use	386	37,778	27,009

The production of Bituminous Coal for the week ending July 7, was as follows:

Tons of 2,000 lb., except where otherwise designated.

	Week, Tons.	Year, Tons.
Cumberland Region, Md..		
Tons of 2,240 lb	21,218	698,682
Barclay Region, Pa.		
Barclay RR. tons of 2,240 lb	5,421	165,830
Broad Top Region, Pa.		
Huntingdon and Broad Top RR.	1,405	69,355
*East Broad Top	1,155	25,064
Clearfield Region, Pa.		
*Snow Shoe	394	21,574
*Tyrone and Clearfield	27,339	632,673
Allegheny Region, Pa.		
*Pennsylvania RR.	3,409	99,262
Pittsburg Region, Pa.		
*West Penn. RR.	3,125	93,176
*Southwest Penn. RR.	638	20,480
*Penn & Westmoreland gas coal, Pa. RR.	13,427	366,382
*Pennsylvania RR.	7,233	181,745

*For week ending June 28.

The Production of Coke for week ending June 28.

Tons of 2,000 lb.	Week.	Year.
West Penn. RR.	952	31,692
Southwest Penn. RR.	12,584	299,588
Penn & Westmoreland Region, Penn. RR.	1,351	39,308
Pittsburg, Penn. RR.	1,104	66,199
Total	15,991	436,787

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 13, 1877.

Anthracite.

Business has continued in quantity about the same as for several weeks back, but there is a growing weakness in prices on all sizes—some brands of the larger sizes, which had heretofore been in very good demand and held at quite firm prices, participating in this weakness. So long as the policy of holding trade at whatever cost, and forcing upon an overstocked market a large production of coal is practiced, so long shall we see the price of coal declining. Already the prices are lower than the averages of the last auction sales, and with the probabilities of two sales on the last Wednesday of this month, it is not unlikely that we shall see a still further decline.

Mr. Gowen is expected to return from Europe within a day or two, and his appearance is looked for with much interest. The indications—a foreshadowing of which we gave a few weeks ago—that some understanding between the several companies for the regulation of the coal business for the remaining portion of the year might be brought about after Mr. Gowen's return, are steadily disappearing, and the present out look points to a much more demoralized condition of business than we have yet seen. The new loan for $10,000,000, about to be placed on the market by the Delaware, Lackawanna & Western R. R. Co., is undoubtedly intended to put that company in a position to demand a proper recognition in any arrangement that may be proposed; a demand that would receive but little attention were its financial position embarrassing. During the week a report that the Delaware & Hudson Canal Company had under consideration a proposition to make a loan for a similar amount gained considerable currency. The rumor is, however, emphatically denied by the officers of the company.

In many branches of trade, when the business becomes an unprofitable one, it is soon regulated by those who are weakest withdrawing from it until the increasing demand advances prices to a point that permits them to re-enter the market. In the coal business, however, whether from a knowledge of the weakness of the others, or from a confidence in its own strength, each company appears to believe it can outlast the majority of its rivals, and it is not improbable that the slaughtering of coal will continue until one or two more of the companies shall be brought down. There is no doubt that, if any arrangement to regulate the anthracite coal trade be proposed, the New Jersey Central Railroad Company, which has already gone to the wall, will more firmly insist upon a proper recognition than any other company, unless it be the Reading, which, to tide over its present difficulties, must have a large business.

Although an arrangement to regulate this year's business does not seem possible, yet we anticipate seeing strong efforts made before the end of the year to fix upon some programme for the regulation of the business of 1878. The only plans that receive any consideration at present are those to simply regulate production, and Mr. Gowen's pooling scheme. We see no reason to think the first plan any more feasible than it was a year ago, when it was abandoned. Mr. Gowen's pooling plan will, naturally, meet with much opposition, and if adopted—which we do not expect—will only be as a last resort of companies on the brink of bankruptcy. Where any consideration is now given to the plan, it is generally upon some modified basis that simply contemplates putting a watch over the distribution of the coal to keep the honorable gentlemen up to their agreements, and embraces none of the economies aimed at by Mr. Gowen. In fact, nothing more than the plan which has already been tried and proved a failure.

The production of anthracite coal last week was reduced about 150,000 tons, as compared with the previous week, the total having been 342,885 and 482,070 tons respectively. The output last week, however, was larger than for the corresponding week of 1876, when it was but 171,172 tons. The total production from January 1 to July 7 was 9,915,120 tons, as compared with 7,165,324 tons for the like period of last year, showing an increase this year of 2,749,796 tons.

Bituminous.

Owing to the strike of the boatmen on the Chesapeake & Ohio Canal, the Cumberland production continues to show a loss as compared with last year. Clearfield, however, according to the latest returns, is still gaining a little on last year, being from January 1 over 60,000 tons ahead of the like period of 1876. The present large output of this region is undoubtedly in part attributable to Cumberland's misfortune. There are no important sales being made in bituminous coal.

There are indications of weakening on the part of the striking boatmen on the Chesapeake & Ohio Canal. The canal authorities are making arrangements to enable such boats as desire to run to pass without interruption from the strikers.

THE COAL TRADE OF PITTSBURG FOR THE FIRST HALF YEAR OF 1877.—The Pittsburg *Commercial* of the 7th inst. says:

"The coal trade of this city has been remarkable for its steady progress, with one or two slight checks, and its uninterrupted increase and expansion during a period when every other industry has been dwarfed and hampered by the stagnation and dullness succeeding the panic. The largest volume that the coal trade ever attained was during the past three years when the aggregate annual movement of coal and coke has varied between 4,500,000 and 5,000,000 tons. We are not able to give any comprehensive statistics of the movement by rail for the first six months of the present year, owing to the disclination of railway officials to furnish figures for such a purpose. The best information that we can obtain shows a movement of about 750,000 tons of coal and 425,000 tons of coke on the various lines of railroad bringing coal to this center. As this indicates a healthy increase in the volume of the coal trade by rail, it is comfortable to accept the estimate as accurate and authoritative.

"But the most remarkable increase is that shown in the shipments of coal from this city to the lower ports by river. The total shipments for the six months ending last Saturday, according to the figures of each run, as published at the date of shipment are 43,939,500 bushels. This is an increase of over 7,000,000 bushels on the total for the corresponding period of last year, and of over 22,000,000 bushels or double that of the same period in 1875. The total is the largest of any similar length of time in the history of the coal trade, the only approach to it being that for the last six months of 1875, which was 40,897,000 bushels, and that of the first six months of 1874, which was 37,533,000 bushels. This increase is the more remarkable in consideration of the losses and drawbacks caused by the breaking of the ice in the Monongahela and Youghiogheny rivers at the close of last January. These were the heaviest losses ever experienced by the coal trade in any one year, and at the time they were sustained, it was thought that the greater part of the year must elapse before they were repaired. When the close of the first six months shows not only that this disaster has been fully overcome, but that the coal trade has attained a greater volume than ever before, the degree of strength and vitality thus developed is indeed truly wonderful.

"The following table shows the shipments of coal and coke by river during the first six months of the year, compared with the shipments for the corresponding periods of 1876 and 1875, in bushels of 76 lb.:

	1877.	1876.	1875.
January	6,614,000	2,675,000	.....
February	2,039,000	2,416,000	140,000
March	14,170,000	14,083,000	11,280,000
April	10,485,500	8,659,000	7,710,000
May	3,822,000	8,823,000	1,998,000
June	6,809,000	.....	.....
Total	43,939,500	36,656,000	21,128,000

The distribution of these shipments is a matter of considerable interest, although difficult to give exactly. We give below the totals to the various points to which the tows were made up. Of course the large share of shipments to Cincinnati and Louisville went to the down river cities, those points only representing the termination of the original tow from this city. The statement is as follows:

Cincinnati	14,783,000	Ironton	959,000
Louisville	23,168,000	Nashville	250,000
St. Louis	1,522,000	Parkersburg	140,500
New Orleans	1,285,000	Madison	130,000
Wheeling	741,000	Portsmouth	8,000
Total			43,939,500

New York.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 50	$5 50
" " at S. Amboy.	5 00	5 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt.	4 50	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore.	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel, Md. " "	4 50	6 00
Cannelton Cannel, West Va.	....	10 00
" Splint " at Richmond.	6 00	7 00
" Gas Coal at Richmond.	4 00	5 65
Peytona Cannel W. Va. at Richmond.	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va	2 83@3 00 — 4 00
Cumberland, at Baltimore	3 13@3 25 — 4 50
Clearfield f. o. b. Canton, Baltimore	3 25@.... — 4 50

Clearfield "Eureka" at mines per ton 2,000 lb., 75c. ; f.o.b. Baltimore and Philadelphia per ton of 2,240 lb., $3.25 ; f.o.b. South Amboy, $4.25 ; alongside at New York, $4.50.

Foreign Gas Coals.

	Sterling.	Am. cur'cy
Newcastle, at Newcastle-on-Tyne	8/6@10/6	5 50@6 00
Liverpool House Orrel, at Liverpool	25/	13 00
Ince Hall Cannel "	35/6	18 00
" Gas Cannel "	25/6	10@10 50
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S.	1 75	4 50
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	....
International mines at Sydney	1 75	4 50
Pictou, Vale mines, at Pictou	2 15	....

Wholesale Prices of Anthracite Coal f. o. b. at the Tide Water Shipping Ports per ton of 2240lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Lackawanna at Rondout	2 50	2 50	2 60	2 60	2 60	2 60
*Scranton at Hoboken	....	2 18	2 26	2 41	2 55	2 35
Wilkesbarre at Port Johnston	2 65	2 65	2 65	2 65	2 75	2 60
Plymouth, R. A.	....	....	2 65	2 65	2 85	2 70
Susque: Coal Co., (S. H. Brown & Co.,) At Amboy	2 50	2 50	2 60	2 65	2 75	2 60
Kingston at Hoboken	2 50	2 50	2 60	2 65	2 75	2 60
Pittston at Newburgh:						
A. S. Swords	....	2 50	2 50	2 50	2 60	2 50
*Penn. Coal Co.	2 51	2 47	2 50	2 48	2 51	2 45
Wyoming at Perth. Amboy	....	2 65	2 65	2 65	2 75	2 75
Lehigh Coals.						
Old Company at port Johnston	3 25	....	2 85	2 85	2 75	2 60
Old Company's Room Run "	3 25	....	2 85	2 85	2 75	2 60
Sugar Loaf, Hobok. & Amb."	3 25	....	2 85	2 85	2 75	2 60
Lehigh at Perth Amboy	3 25	....	2 85	2 85	2 75	2 75
Honey Brook Lehigh	3 25	..	2 85	2 85	2 75	2 60
Mount Pleasant at Hoboken	3 25	....	2 85	2 85	2 85	2 75
Cross Creek at Port Johnston	2 65	2 65	2 75	2 75	2 75	2 60
Schuylkill Coals *at Port Richmond, Philadelphia.*						
Schuylkill white ash	....	....	....	....	....	....
Schuylkill red ash	....	....	....	....	....	....
Lorberry	....	....	....	....	....	....
Lykens Valley	....	....	....	....	....	....

‡Boats towed by the D. & R. Co. at its expense to and from New York Harbor.

* These quotations represent the average prices of the last auction sale

Per ton.

Freight from Hoboken and Weehawken to New York 35c.
" " Elizabethport & Port Johnston to N. Y. 35c.
" " South Amboy to New York 35c.

Freight by the boats of the companies from Hoboken, Rondout, Port Johnston, Weehawken, South Amboy and Perth Amboy to New York City and vicinity 50c.

Pittston coal at New York delivered by Penn. Coal Co.'s boats 60c. per ton additional.

Lackawanna coal delivered to carts in New York or Brooklyn, 50 cents per ton additional.

Retail Prices in New York.

Anthracite.

Per 2000 lbs.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$3 25	$3 50	$3 25
Lackawanna coal, delivered	3 75	3 75	3 75
Wilkes-Barre, delivered	4 30	4 60	4 30
Lehigh and Locust Mountain, del'd	4 55	4 85	4 55
Schuylkill Red Ash, del'd	5 25	5 50	4 75

The Cost of delivery 1or Pittston coal ranges from 40cts. to $1 10 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	18 00
American " " " "	11 00
Cannelton Block, or splint, " " "	10 00
American Orrel " " "	11 00
Red Bank Cannel " " "	9 00
Cumberland " " "	7 00

Baltimore. July 12, 1877.

Specially reported by Messrs. E. STABLER Jr., & Co.

Wholesale Prices.

AFLOAT BY CARGO PER TON OF 2,240 LB.

Lump and Steamboat	$3 40	Stove	$3 65
Broken	3 25	Chestnut	3 40
Egg	3 30		

In cars in dealers' yards or on switch, 15c. per ton additional.

Lykens Valley Red Ash.

AFLOAT BY CARGO.		BY RAIL IN CARS.	
Broken	$3 98	Broken	$4 15
Egg	4 13	Egg	4 30
Stove	4 13	Stove	4 30
Chestnut	3 36	Chestnut	3 80

From wharf or yard to the trade, 50c. per ton additional.

Bituminous.

George's Creek, f. o. b. at Locust Point	$3 50 to $3 60		
Clearfield, " Canton	3 30 to 3 40		

Boston. July 7, 1877.

Coal is dull and unchanged. Early in the week there was a little bullish feeling, based on the reports of an early combination, to be inaugurated immediately upon Mr. Gowen's return. Sated, however, the market lapsed into the old depressed condition. Gas coals are quiet and unchanged, with few arrivals from the Provinces. Freights are dull and easy. We quote $1.25 @1.35 from Philadelphia, $1.40@1.50 from Baltimore $1.50@1.60 from Alexandria and Georgetown, and $1 @1.10 from New York.

We quote Boston wholesale prices as follows :

Anthracite, broken	$3 75@3 90	Cannel, English	$16 00
do. egg	3 75@3 90	do. Buckeye	10 00
do. stove	4 00	Lingan	4 00
Cumberland	4 25	Pictou	5 00
Clearfield	4 00	Penn	5 50
Westmoreland	5 50	Youghiogheny	4 50@5 50
Caledonia	4 00		

—*Commercial Bulletin.*

Buffalo. July 12, 1877.

Specially reported by LEE & LOOMIS.

The Scranton, Wilkes-Barre, Plymouth, Shamokin, and Delaware and Hudson (Lackawanna) are offered for the present at the following prices per ton of 2,000 lb. :

Delivered at	Elmira.	Ithaca.	Syracuse.	Rochester	
	Afloat.	Afloat.	Afloat.	Afloat.	Ret. Del.
Lump	....	....	....	....	....
Grate	$3 50	$2 85	$2 85	$3 10	$4 35
Egg	3 50	2 95	2 95	3 20	4 45
Stove	3 75	3 20	3 20	3 45	4 70
Nut	3 75	3 10	3 00	3 25	4 50

Delivered at	Oswego	Erie.	Buffalo.		
	F. O. B.	F. O. B.	Afloat.	F. O. B.	Ret. Del.
Lump	....	....	....	....	....
Grate	$3 25	$3 75	$3 35	$3 75	$4 60
Egg	3 35	3 85	3 45	3 85	4 70
Stove	3 60	4 10	3 70	4 10	4 95
Nut	3 40	3 90	3 50	3 90	4 75

Cost of coal from Erie, Oswego, Sodus Point, or Charlotte for Western market, same as if shipped from Buffalo. Terms cash. All payments to be made in New York city funds :

	Lump.	Run of Mine.	Nut.	Slack.
Connellsville Coke	$5 00	....	.....	....
Brookfield Coal	4 15	....	.....	....
Brier Hill	4 00	....	2 85	....
Youghiogheny	4 00	....	.....	....
Monterey	3 25	3 00	.....	2 25
Catfish			.....	
Stoneboro'	....	....	2 75	2 25
Sterling Cannel	5 00	broken 4 75	4 50 nut & slack	....
Reynoldsville	3 25	3 00	2 65	2 25
Buffalo Coal Company	....	3 00	.....	2 25

Chicago, Ill. July 10, 1877.

Specially reported by Messrs. RENO & LITTLE.

The following are the prices to-day for coal :

Lackawanna Stove	$6 00	Erie and Brier Hill	$5 50
" Chestnut	6 00	Wilmington and Ill. 3	50@4 00
" Grate and Egg.	5 75	Blossburgh	6 50

Cincinnati, O. July 10, 1877.

Specially reported by the Consolidated Coal and Mining Co.

The market for anthracite and bituminous coals is depressed and heavy. The recent arrivals of Youghiogheny coal have for the most part remained in the shippers' hands, a few sales noted at 7c. The competition for anthracite sales on cars has brought the price down to $5.75@$6 according to quality.

	AFLOAT. Per bush.	per ton 2,000 lb.	DELIVERED. Per bush.	per ton 2 000 lb.
Youghiogheny lump	7c.	$1 94	10c.	....
" nut	5½c.	1 53	9c.	....
" slack	4½c.	1 25	8c.	....
Camden, W. Va.	5½c.	1 53	9c.	....
Peytona Cannel	16c.	4 57	20c.	....
Connellsville coke	7c.	3 60	10c.	....
Youghiogheny coke	5c.	2 64	8c.	....
Crushed coke	..	....	10c.	...
Anthracite, Wilkes-Barre or Lehigh by car load			$6 00	
" " "			delivered..7 00@7 50	

Cleveland, O. July 10, 1877.

Specially reported by Messrs. LAMBIE & BATES.

Per ton of 2000 lbs. f. o. b. vessels.

WHOLESALE.

Brier Hill (Church Hill)	3 50
" " No. 2 Grades	3 35@3 40
Straitsville Lower Vein	2 80
Hocking Valley	2 80
Massillon	2 85
Mineral Ridge (Cambria Mine)	2 85
Tuscarawas Valley	2 30
Columbiana	2 30
Nut coal, various grades	2 20@2 50
Screenings, " "	1 35@1 75
Youghiogheny gas coals	3 75@3 85

The following are the prices established by the Coal Exchange until further notice :

RETAIL TRADE.

	1 to 10 tons.	10 tons. upw'd.
Brier Hill lump	$4 25	$4 00
" " nut	3 75	3 50
Massillon and Mineral Ridge lump	4 00	3 70
" " nut	3 75	3 55
Straitsville Lower Vein, Hocking & Shawnee. l'p.	3 60	3 35
" " " " nut	3 40	3 15
Del Carbo lump	3 75	3 50
" " nut	3 50	3 25
Rich Hill lump	3 50	3 35
" " nut	3 25	3 00
Columbiana, lump	3 25	3 00
nut	2 75	2 50
Lacka'a., Wilkesbarre and Pittston egg and grate,	7 00	6 75
" " " stove	7 50	7 25
" " " chestnut	7 00	7 25

Lehigh $1 25 per ton higher.

All sales to be strictly cash with order or C. O. D.

Hamilton, Ont. July 9, 1877.

Specially reported by H. BARNARD.

I beg to hand you state of our market corrected to date.

Grate	$4 50	Lehigh Lump	$5 30
Egg	4 50	Brier Hill	5 00
Stove	4 75	Massillon	4 50
Nut	4 75	Blossburgh	5 50

Indianapolis, Ind. July 10, 1877.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers

BITUMINOUS.

White River, per ton	$ 2 50	Peytona Cannel, per ton	$ 5 75
Brazil Block, "	2 25	Indiana Cannel	4 50
Highland, grate, "	2 00	Hocking Valley	4 25
Block coal, nut, per car	18 00	Youghiogheny	4 50
Highland " "	18 00	Blossburg (smithing)	6 50
Block Slack "	17 00	Piedmont "	6 50
		Gas Cake, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre).

Broken	$7 60	Nut	$6 70
Egg	7 60	Stove	6 70

Lehigh Anthracite.

Broken	$7 60	Nut	$7 30
Egg	7 60	Stove	7 70

Retail, per bushel, delivered.

Sand Creek	13c.	Block Nut, steam	8c.
White River	13	" Slack, "	0
Brazil Block	13	Virginia Cannel	27
Highland Grate	11	Youghiogheny	16
Block Nut, domestic use.	11	Blossburg	26
Highland Nut, " "	11	Piedmont	26
" " steam	8		

GAS COKE (measured.)

Crushed	14c.	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes)	$7 50 per ton.
Lehigh, retail	8 50 per ton.

Louisville, Ky. July 10, 1877.

Specially reported by Messrs. BYRNES & SPEED.

Below find latest quotations :

WHOLESALE.

Pittsburg	7c. per bush.	Pine Hill	8½c. per bush.
Raymond City	7c. "	Kentucky	7½c. "

RETAIL.

Pittsburg	11c. per bush.	Pine Hill	11c. per bush.
Raymond City	10c. "	Kentucky	10c. "
Indiana Cannel	17c.	Honeywell Can'l	19c.
City Make Coke	8c. "	Anthracite $8 50 to $9 per ton.	

Montreal. July 10, 1877.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Scotch Steam	$4 00	Cape Breton Steam	$3 75
Pictou	4 00	Newcastle Smiths	5 75

Anthracite at retail, per 2,000 lb. delivered.

Egg	$4 75	Chestnut	$5 00
Stove	5 15		

Milwaukee, Wis. July 9, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2,000 lb.

Anthracite, egg, chestnut, and stove	$5 50		

Wholesale price per ton of 2,000 lb.

Lehigh lump	$6 50	Connellsville coke on RR. track	$7 25

New Orleans, La. July 9, 1877.

Specially reported by Messrs. C. A. MILTENBERGER & Co.

Coal on hand July 1 : Pittsburg coal, 118 boats, 1 barge and 1 French creek ; St. Bernard coal, 3 boats. Consumption during June : Pittsburg coal, 19 boats, 7 barges and 3 French creeks ; St. Bernard coal, 1 boat. Arrivals of coal, none. The coal market is dull. Demand limited and stock small. We quote :

PITTSBURG COAL.

At wholesale (by boat load)	35c. per bbl.
To steamboats	40c. "
" manufactories	50c. "
" families	65c. "
In hhds. (for shipment)	$6 00 per hhd.

ANTHRACITE COAL.

At wholesale	$7 00 to 8 00 per ton.
" retail	11 00 "

VIRGINIA CANNEL COAL.

At retail	$1 00 per bbl.

ST. BERNARD (KY.) COAL.

To steamboats	40c. "
" families	55c. "

Philadelphia, Pa. July 12, 1877.

Specially reported.

The trade is greatly prostrated at all points, and if there is not a curtailment in production very soon, prices will go far below what the most vivid imagination ever conceived they could reach. The plan lately suggested in the *Miner's Journal*, and which has been talked of for years seems, after all, the only equitable and practicable one. Let the corporations who are the "authors" of this running-over production be the ones to curtail, and do so by the abandoning for the present a certain number of collieries. Each of them would, of course, select the most expensive to work, and the gain would be a double one, while it would stop the present condition of things, which has reached a point far beyond recklessness, and which may very properly be called wickedness and insanity.

Freights rule low; $1.10 to $1.15 to Boston; 50c. to 60c. to Southern ports, and orders are scarce.

Pittston, Pa. July 12, 1877.

Pennsylvania Coal Company's Coal in yard, ton of 2000 lb.

Retail.

Lump, Egg and Stove	$2 25
Chestnut	2 00
Pea	1 00

Delivered, fifty cents per ton additional

Richmond, Va. July 12, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2,240 lb., f. o. b.

Kanawha Cannel	$9 00	New River Bituminous	$3 60
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston "	5 70	James River Bitum.	3 50
Kanawha Gas Coal	4 90	" " Carbonite	5 25

Sandusky, O. July 10, 1877.

Specially reported by C. E. BLACK, Agt. Con. Coal & Mg. Co.

We quote coal on cars at Sandusky, as follows:

Per ton of 2,000 lbs.

Anthracite.

	Grate.	Egg.	Stove.	Chestnut
Wilkes-Barre	$4 80	$4 80	$4 80	$4 80
Lackawanna	4 80	4 80	4 80	4 80
Lehigh	5 80	5 80	5 80	5 80

Bituminous.

Massillon	$2 90	Straitsville	$2 65
Del Carbo	2 65	Shawnee	2 65
Hocking Valley	2 65	Blossburg	4 75

Prices f. o. b. vessel for soft coal, 15c. advance on car prices. Prices retailed delivered 50c. above car prices.

San Francisco, Cal.

From the *Commercial Herald* of July 5, 1877.

COAL—Imports from January 1 to June 16:

	Tons.		Tons.
Anthracite	9,427	Mt. Diablo,	31,753
Australian	23,393	Vancouver Island	39,895
Coos Bay	15,690	Rocky Mountain	43
Cumberland	7,845	Seattle	52,550
English	37,031	Bellingham Bay	5,700
Chili	3,951	Ione, Cal.	139

Steamer advices from Australasia report free shipments to this coast both from Newcastle and Sydney. Between steamers eight vessels had sailed for this port with 9,516 tons, and three more were loading at Sydney. This intelligence has caused increased depression, and we cannot now quote cargoes of Wallsend to arrive better than $9@9.25, the latter rate for small cargoes. We have now to note the arrival of the *Helen Burns* from Swansea with 915 tons coke, and 200 tons patent fuel; the *Grace Darling* from Departure Bay with 1,460 tons; *Thurland Castle*, 1,960 tons Australian. The Seattle *Tribune* speaks of free shipments to San Pedro for the use of the Southern Pacific Railroad. Seattle coal is becoming a decided favorite in our market. This and Wellington enter largely into local use for household purposes, thus displacing West Hartley, Wallsend and other hitherto favorite coals. At this date spot supplies are free, and the market fully stocked with Seattle, Nanaimo, and other Pacific Coast varieties. Indications all point to an increased Pacific Coast production, not only from Washington Territory, but from the mines in this State and Nevada. Egg size Pacific Coast Bituminous is selling by the cargo at 5@5 50 per ton, while coarse kinds of Seattle, Nanaimo, Wellington, Coos Bay and Bellingham Bay screened may be quoted at $7 50@8 per ton, according to quantity. Black Diamond and other California Mt. Diablo Coals sell at $5 75@7 75 for fine and coarse respectively. Prices of Scotch and English Steam to arrive may now be quoted at $8 50@9; West Hartley, $9@9 50.

St. Louis, Mo. July 10, 1877.

Reported by JAS. J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE. per ton.

Lackawanna	$8 00@8 50	Schuykill	8 00@ 8 50
Wilkes-Barre	8 00@8 50	Lehigh	9 00@ 9 50

BITUMINOUS.

Blossburg	9 00	Big Muddy	3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connellsville Coke.	6 50

Toledo, Ohio. July 10, 1877.

Specially reported by Messrs. GOSLINE & BARBOUR.

We report prices of coal on cars at Toledo as follows:

Ton of 2,000 lb.

Straitsville lump	$2 70	Hocking Valley nut	2 30
" nut	2 30	Massillon lump	3 00
Shawnee lump	2 70	Cumberland	5 40
" nut	2 30	Blossburg	5 40
Hocking Valley lump	2 70		

	Grate.	Egg.	Stove.	Chestnut
Pittston	$4 95	$4 95	$5 20	$5 10
Wilkes-Barre	4 95	4 95	5 20	5 10
Lackawanna	4 95	4 95	5 20	5 10

For retail delivery in city the prices are as follows: Stove and chestnut $5.75; grate and egg, $5.50 per ton.

Prices soft coal f. o. b. vessel for Lake shipments will be from 15 to 20c. per ton more than prices on cars.

Rates of Transportation on Anthracite Coal.

OFFICE OF THE PA. &. N. Y. R. R. Co., Bethlehem, June 1, 1877.

On and after this date the rate on coal for Buffalo, for Watkins, Ithaca, and Weedsport, for water shipment; Auburn, for New York Central R. R.; Sterling, for Lake Ontario Shore R. R., and Fair Haven, will be 81 cts., per gross ton, between Coxton and Waverly. On all coal transhipped at Waverly into broad guage cars, an additional charge of 10 cts. per ton will be made to cover the expense thereof. The full rate from Coxton to Buffalo is $2.23; to Rochester, $2.02.

ROBERT H. SAYRE, President.

Geneva, Ithaca and Sayre Railroad.—The rates of transportation on coal from Coxton, Pa., per ton of 2,240 lb., from and after the first of June, will be as follows:

To East Waverly, N. Y.	$1 75
" Ithaca for C. Lake RR. (local)	1 64
" " for C. L. RR. and for shipment via Erie Canal	1 13
" Van Etten, for U. I. and E. RR.	1 61
" Geneva (local)	1 62
" Geneva for S. P. and S. and L. O. S. Railroads, and for N. Y. C. and H. R. RR., except Auburn and Cayuga	1 46
To Geneva for Buffalo and Tonawanda	1 34
" " " Genesee Docks	1 30
" " " Rochester and Charlotte	1 43
" " " Auburn and Cayuga	2 50
Total rate to Buffalo	2 23
" " " Rochester	2 02

REGULATIONS.

A charge of fifteen cents per ton will be collected of each consignee on all coal not unloaded within twenty-four hours after its arrival, and an additional charge of ten cents per ton for every twenty-four hours thereafter; Sundays and legal holidays excepted.

No allowance will be made for coal lost from cars on account of broken doors or other defects existing when the cars are loaded.

Seventeen cents per ton will be charged, at Ithaca Docks, for shipping coal direct from cars to vessels, and 12 cents per ton additional from stock, making a total charge on what is shipped from stock of 29 cents per ton.

All freights will be collected weekly, by drafts on shippers, from Coxton to destination.

For freights on anthracite coal from *Rondout and Newburgh* we refer to our issue of June 30.

For freights on *Anthracite Coal to Tide Water Ports* we refer to our issue of July 7.

For rates of transportation on coal via the *Erie Canal* we refer to our issue of June 30.

For freights on *Schuylkill Coal* we refer to our issue of July 7.

For freights on *Lehigh and Wyoming Coal* we refer to our issue of July 7.

Freights

Representing the latest actual charters up to July 12.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore.	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me.	157½@175	....	....	1 50
Albany	....	....	....	....
Alexandria, Va	....	....	....	....
Annapolis, Md.	....	....	....	....
Bangor, Me.	125@135	....	....	1 00
Bath, Me.	120@125	....	....	1 00
Baltimore	40@65	....	....	....
Boston, Mass.	115@140	....	....	1 00
Bridgeport, Ct.	....	....	....	80
Bristol, R. I.	....	....	....	80
Beverly, Mass.	1 20	....	....	1 00
Cambridgeport, Mass.	....	....	....	1 00
Charleston, S. C.	90	....	....	....
Danversport, Mass	....	....	....	....
East Greenwich, R. I.	....	....	....	....
Fredericksburg, Va.	1 00	....	....	....
Fall River	1 15	....	....	80
Gloucester	1 25	....	....	....
Greenport, N. Y.	....	....	....	....
Hartford, Conn.	....	....	....	....
Hoboken	....	....	....	35
Hudson	....	....	....	....
Jersey City	....	....	....	35
Lynn, Mass.	....	....	....	....
Medford, Mass.	....	....	....	....
Middletown	....	....	....	....
Marblehead, Mass	....	....	....	....
Nantucket, Mass.	1 35	....	....	85
New Bedford	1 00	....	....	85
Newburyport	....	....	....	1 10
New Haven	....	....	....	50
New London	....	....	....	....
Newport	1 15	....	....	80
New York	90†	....	....	35
Norfolk	55	....	....	75
Norwalk	....	....	....	50
Norwich	....	....	....	....
Pawtucket	1 25	....	....	90
Philadelphia	....	....	....	....
Portland	....	....	....	1 00
Portsmouth, N. H.	....	....	....	1 10
Providence	1 10	....	....	80
Poughkeepsie, N. Y.	....	....	....	....
Quincy Point, Mass.	....	....	....	....
Richmond, Va	60	....	....	....
Salem, Mass.	1 32	....	....	1 20
Saugus, Mass	....	....	....	....
Saco, Me	1 55	....	....	....
Somerset, Mass	....	....	....	....
Thomastown, Me	....	....	....	....
Troy	....	....	....	....
Trenton, N. J.	....	....	....	....
Washington	55	....	....	....
Wilmington, N. C.	1 10	....	....	....
Wareham	....	....	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 3c. per bridge extra.

Towing.

Rates of Towing from New York to places on the *Hudson River*

Boats of 200 tons capacity and upwards.

Per ton of 2,240 lb.

	cts.		cts.
Manhattanville	7	Verplanck's Point and Haverstraw	15
Yonkers & Spuyten Duyvel	8	West Point & Cold Spring	16
Piermont	11	Newburg	17
Nyack, Tarrytown & Sing Sing	14	Poughkeepsie	18
Peekskill, Croton Landing,		Rondout	20

Rates for boats of 100 tons per boat are as follows:

	$		$
Manhattanville	10	Sing Sing and Peekskill	20
Yonkers	15	Newburgh	25
Tarrytown	18	Poughkeepsie	30

Special Rates will be made for Saugerties and Catskill.

East River and Sound Ports, from the foot of Twenty-third Street to the following points, *and return*, per ton of 2,240 lb.

	cts.		cts.
New Haven and Bridgeport	17	New London	32
South Norwalk	20	Middletown	46
Southport, Milford and Westport	25	Norwich, Stonington and Mystic	38
Branford and Saybrook	30	Hartford	52

Derby 17 cts. per ton and $50 per boat extra.

Rates to the following places and *return* per boat:

	$		$
61st Street, E. R.	8	Westchester & Flushing	25
79th " "	9	Little Rock, Pt. Wash'gton, N. Rochelle & Glen Cove	40
93d " " and Astoria	10	East Chester (Town Dock	50
Harlem and Mott Haven	14	Roslyn, Mamaroneck, Port Chester an d Stamford	50
West Farms (mouth of creek)	20	Darien	60
College Pt. & Whitestone	23		

Boats carrying less than 210 tons will be charged the same as if carrying that quantity. Boats for New Haven will be landed at Bell Dock, or Canal Dock only; all towage to Derby Dock, and to yards, to be paid by consignees. Boats for Bridgeport will be landed at Naugatuck R. R. Dock or Housatonic R. R. Dock only. All towage to yards to be paid by consignees.

Rates via the Hudson River are furnished to us by A. B. VALENTINE, No 41 Jay street. Rates via the East River are urnished by the Eastern Transportation Line.

Rates of Toll

On the Erie, Champlain, Oswego, Cayuga, and Seneca Canals.

Toll is to be computed upon the weight, 1,000 lb. per mile.

	Cents.		Cents.
Acid, sulphuric	0·1	*Iron & steel in sheets, bars, and bundles	0·1
*Car axles	0·1	Iron ore	0·25
Car wheels (iron)	0·05	" bloom and pig	0·05
Castings, all iron castings	0·1	* " boiler	0·1
Cement, fireproof	0·1	* " bridge and railing	0·1
Clay	0·05	* " bolts	0·1
Coal	0·025	Lime, manufactured	0·1
Coal oil	0·05	Lumber	0·25 to 1·25
Copper ore, pig and smelted	0·05	Petroleum, crude or refined	0·05
Fire-brick	0·05	Powder & gunpowder	0·4
Gas pipes	0·05	Salt, foreign	0·25
Gypsum, ground and unground	0·1	" manufactured in New York State	0·05
Gypsum, product of New York State	0·05	Slate	0·05
Iron, articles exclusively manufactured of wrought iron not specifically enumerated when cleared at tidewater	0·05	Stone	0·05
		Tin plates, going from tidewater	0·05

* The rate on these articles, when cleared at tide water, is 0·05 cent.

Lead, bar and pig, is transported free of toll.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, July 13, 1877.

American Pig.—We note only a sale of 200 tons of Jagger iron, delivered here at $17. The demand is very light and prices are weakening in nearly every quarter. We hear of good brands of iron offering, for cash at very low figures; so low, in fact, that they must entail a loss upon the majority of furnaces in blast, if they attempt to meet the market. We do not doubt that the cost of making iron can be still further reduced, but the process will be slow, and will not keep up with the apparent inclination to reduce the selling price. It is very evident that the financial necessities of some of the companies is the unsettling element to prices, and under this influence we may see iron reach a point much below the natural "bottom;" but, with such companies running constantly at a loss, it is only a matter of time until they will be compelled to close their furnaces and resign the business to the stronger concerns, which will advance prices to a basis that will cover expenses, or pay a profit, according to the demands of the market. The excessive productive capacity of the East must hang over the market for a long time, keeping the selling price of iron at or near the cost of producing, thereby keeping the speculative feeling out of the trade and confining the purchases of consumers to nearly their actual wants. We quote No. 1 foundry at $18 @ 19; No. 2 foundry, $17 @ 18, and forge $16 @ 17.

Scotch Pig.—There is no important business doing. We quote Eglinton at $24; Coltness, $26.50; and Glengarnock, nominal, at $25.

Messrs. John E. Swan & Brothers, of Glasgow, under date of June 29, report 110 furnaces in blast as against 116 a year previous; quantity of iron in Connal & Co.'s stores, 141,287 (increase of 1,220 tons for the week) as against 65,101 tons a year previous; shipments for the week ending June 23, 13,342 tons, as compared with 8,071 tons for corresponding week of 1876; shipments from December 25, 1876, to June 29, 223,197 tons, as against 221,991 tons for the like period of 1875-6. They quote No. 1 iron as follows; Gartsherrie, 61s. 6d.; Coltness, 65s.; Summerlee, 59s. 6d.; Langloan, 62s.; Glengarnock, 59s.; and Eglinton, 55s. They quote freights as follows: to New York, 2s.; Boston, 9s.; New Orleans, 5s.; Baltimore, 8s.; Philadelphia, 7s. 6d.; Montreal, 10s.; and San Francisco, 25s.

Rails.—We note a sale of 750 tons of steel rails at $47 at tidewater. Although there are numerous inquiries in the market, yet the outlook for business is not very encouraging. We quote iron rails at mills at $33@36, and steel at $44@46.

Old Rails.—There is a rumor of a sale of from 200 to 300 tons of old rails at $19.

Scrap.—We are reported sales aggregating 250 tons of No. 1 wrought on private terms. We quote $23 @24.

Baltimore, Md. July 9, 1877.

Specially reported by Messrs. R. C. HOFFMAN & Co.

The iron market is without change, and continues dull and depressed with light sales at quotations.

Baltimore Charcoal	$29@31	Mottled and White	$15@16 00
Virginia Charcoal	28@31	Charcoal C.B. Blooms	45@50 00
Anthracite No. 1	19@20	" " Billetts.	55@60 00
" " 2	18@19	Refined Blooms	45@50 00
Anthracite No. 3	17@19	Scrap Blooms	43@45 00

Boston. July 7, 1877.

Pig is dull and nominally unchanged, though prices tend decidedly downward, and concessions would probably have to be made to effect important sales. We quote $22@$23 for No. 1, $21@$21.50 for No. 2, and $20.50@$21.50 for gray forge. Scotch pig is dull at $24@$30 for store lots.

Bar is dull, quoting $46@$47 for refined, and $37@$38 for common. Nails are in light demand at unchanged prices. Sheet is selling at 3c.@3¾c. per pound. Russia is quiet at 12c. currency. We quote English spring steel 7@8c. gold; 9@11c. for German; 9@11c. for machinery; 14@15c. for cast; 10@12c. for blister; 8c. for American spring; 13½@14c. for cast; 9c. for blister; and 8c. for machinery.—*Commercial Bulletin.*

Chattanooga, Tenn., July 9, 1877.

Specially reported by J. F. JAMES, dealer in pig iron, ores, etc.

No change to note in the condition of our market since our last report. Demand for foundry irons unchanged. Prices remain the same.

Tenn., Ala. and Ga. Charcoal, No. 1 Foundry	$18 00@19 00		
Tenn., Ala. and Ga. Charcoal, No. 2 Foundry	17 00@18 00		
Tenn., Ala. and Ga. Charcoal, Gray Forge	15 00@16 00		
Tenn., Ala. and Ga. Coke, No. 1 Foundry	19 00@20 00		
Tenn., Ala. and Ga. Coke, No. 2 Foundry	17 00@18 00		
Tenn., Ala. and Ga. Coke, Gray Forge	16 00		
Charcoal or Coke, white and mottled	14 00@15 00		
Tenn., Ala. and Ga. Cold Blast (car wheel)	22 00@28 00		
Old rails	18 00@19 00	Wrought scrap,	
Old car wheels	16 00@17 00	No. 2	12 00
Wrought scrap, No. 1	17 00	Cast scrap	10 00
		Muck bar	32 00@33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Cincinnati, O. July 10, 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below we hand the closing quotations of our pig iron market.

CHARCOAL.

Hanging Rock A1 Extra	$25 00@25 50—4 mos
" No. 1 Foundry	$24 00@ ....—4 mos
" No. 2 "	22 00@22 50—4 mos
" Soft Silver Gray	22 00@22 50—4 mos
" Mill	20 00@21 00—4 mos
Tennessee, No. 1 Foundry	23 00@23 50—4 mos
" " 2 "	22 00@22 50—4 mos
" Mill,	20 00@21 00—4 mos

STONE COAL.

Ohio, No. 1 Foundry	21 50@ ....—4 mos
" " 2 "	20 50@ ....—4 mos
" Silvery	19 50@ ....—4 mos
" Mill	@ ....—4 mos

COKE.

Ohio & W. Va. No. 1 Foundry	23 00@25 00—4 mos
" " " 2 "	22 00@23 00—4 mos
" " Mill	@ ....—4 mos

CAR-WHEEL.

Hanging Rock, C. B. Car Wheel	38 00@40 00—4 mos
Tennessee, "	30 00@ ....—4 mos
Missouri, "	30 00@33 00—4 mos
Alabama, "	30 00@35 00—4 mos

BLOOMS.

Charcoal	50 00@ ....—cash.

SCRAP IRON.

Cast	50c.@ 65c.— "
Wrought	75c.@ 90c.— "

Cleveland, O. July 10, 1877.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, L. S. Charcoal	$25 00	Am. S., No. 1, Ch Val.	$24 00
No. 2, " "	25 00	" " B. 1, " "	22 00
No. 1, Anthracite	23 00	" " No. 2, " "	20 00
No. 2, "	21 00	No. 1, Massillon	24 00
No. 1, Bituminous	24 00	B—1, "	22 00
No. 2, "	22 00	No. 2, "	20 00

CAR WHEEL AND MALLEABLE IRON.

No. 3 L. S. Charcoal	26 00	No. 5 & 6, L. S. Charcoal	$27 00
No. 4, " " "	26 00		

BESSEMER IRON.

Nos. 1 & 2, L. S. Char.	$25 00		

FORGE IRON.

No. 1, Gray	$20 00	White and Mottled	$18 00

Louisville, Ky. July 10, 1877.

Specially reported by Messrs. GEORGE H. HULL & Co.

But little change in the market, but a somewhat weaker feeling has developed. Some sales of round lots have been made considerably below quotations. The usual time, four months, is allowed on the quotations below.

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$24 00@24 50
No. 2 " "	21 00@22 00
No. 1 Southern Charcoal	21 00@22 00
No. 2 "	20 00@20 50
No. 1 Hanging Rock, Stonecoal and Coke	22 00@23 00
No. 2 " " " "	20 00@21 00
No. 1 Southern Stonecoal and Coke	20 50@21 00
No. 2 " " " "	20 00@20 50
"American Scotch"	22 50@23 00
Silver Gray	19 00@21 00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	19 00@20 00
No. 1 Stonecoal and Coke, Cold-short and Neutral	18 00@19 00
No. 2 " " " " " "	18 00@18 50
No. 1 Missouri and Indiana Red-short	22 00@23 00
White and Mottled, Cold-short and Neutral	16 00@17 00

CAR-WHEEL AND MALLEABLE IRON.

Hanging Rock, and Cold Blast	35 00@38 00
Alabama and Georgia "	26 00@33 00
Kentucky Cold-blast	25 00@36 00

Milwaukee, Wis. July 7, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Wholesale Price.

Charcoal Iron.

No. 1 Lake Superior per gross ton	$25 00—4 mos.
No. 2 " " "	24 00—4 mos.

Anthracite Iron.

No. 1 anthracite per gross ton	$25 00—4 mos.
No. 2 " " "	24 00—4 mos.

Stone Coal & Coke.

Wholesale Price.

Warner's Am. Sc'th (Bk. Bend) per ton	$25 00@ ....—4 mos.
Soft Silvery per ton	22 00@23 00—4 mos.
Lake Superior and Lake Champlain ores	24 00@25 00—4 mos.
Sharpsville (Penn.) native ores	24 00@25 00—4 mos.

Car Wheel.

Lake Superior ores per ton	$25 00@27 00—4 mos

Montreal. July 3, 1877.

A slight drop has taken place in the sterling price of some brands of pig iron, but it will not likely affect this market much, as the reduction has been pretty well discounted before the actual confirmation of the fact. Our quotations are same as last week: Pig iron—Gartsherrie, $20 to $20.50; Summerlee, $19 to $19.50; Eglinton and Clyde, $18.50 to $19; Langloan $19.25 to $19.75; Coltness, $20.25 to $21; Hematite, $23 to $24; American, $20 to $21. Bars—Scotch and Staffordshire, $1.90 to $1.95; best do., $2.20 to $2.25; Swedes and Norway, $4.50 to $5; Lowmoor and Bowling, $6.25 to $6.50.—*Monetary Times.*

Philadelphia, Pa.

[Weekly Report of the Philadelphia Iron Market, furnished for THE ENGINEERING AND MINING JOURNAL, by JUSTICE COX, Jr., & Co., Iron Merchants, 333 Walnut Street, Philadelphia, Week ending July 12, 1877.]

PIG IRON.—The demand for pig iron continues exceedingly light, though a few more inquiries may be reported than at our last, not amounting to sales, however. We hear reported that the Thomas Company are about to blow in two additional furnaces, asserting that the only profit is in quantity. Pig continues to be quoted at almost any price, from $18 to $20 for No. 1, $17.50 to $18.50 for No. 2, $16 to $18 for gray forge.

MANUFACTURED IRON.—Probably this branch of the trade was never duller than at this writing, few inquiries and fewer sales are reported. The idle mills are making an effort to start, but with little hope of a profit, so low prices are the rule. We quote bars at 2 to 2·2c. per lb. for best refined iron; common iron is selling for almost any price; plate and tank continue to sell in a small way; we quote 2¾ to 6¼c. per lb. Skelp—nothing new this week; we quote 2·15 to 2½c., as to quality and order.

RAILS.—There has been a little movement in steel rails, at a small concession in price; iron rails continue in demand, but little money is to come, so few sales are being made; we quote, steel, $46 to $50; iron, $33 to $36, all at mill.

OLD RAILS.—The demand continues light, and few sales are reported. We quote $20 to $21.

OLD WHEELS continue to press on the market, and low prices are quoted. We quote $18 to $20.

SCRAP.—Wrought scrap is in plentiful supply at $20 to $26. Cast is quoted $14 to $19.

MUCK BARS are quoted $34.50 to $36 at Philadelphia.

Pittsburgh, Pa. July 10, 1877.

Specially reported by A. H. CHILDS.

Pig iron continues extremely dull, and while quotations remain nominally unchanged the market is weaker and the tendency towards lower prices.

	4 mos.		4 mos.
No. 1 F'dry	$22 00@24 00	Mottled & White	$18 00@19 00
" 2 "	20 00@22 00	Hot blast C'coal	22 00@28 00
Gray Forge	19 00@21 50	Cold " Western	40 00@45 00

Richmond, Va. July 8, 1877.

Specially reported by ASA SNYDER, Esq.

Virginia Cold Blast Charcoal Pig Iron, cold blast	$21 to $25
" " " " " " neutral	30 to 32
" " Warm " " "	24 to 28
" Anthracite 1 X	21 to 22
" " 2 X	20 to 21
" " 2	19 to 20
" " Coke Quinimont 1 X	23 to —
" " " " 2 X	22 to —

St. Louis, Mo. July 11, 1877.

Market very dull. Nothing new to report. We quote same as last.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

COLD BLAST CHARCOAL—ALL NUMBERS

Hanging Rock	25@40	Assorted Bar Iron	$2 10, rates.
Tennessee	28@30	No. 1 Wrought Scrap	80c. cwt.
Kentucky	28@30	Heavy cast "	65 "
Missouri	28@30	Light " "	35 "
Georgia	28@30	Old rails	18 50 to 19 00
Alabama	28@30	Old car wheels	18 00 to 19 00

	No. 1.	No. 2.	Mill.	White and Mottl'd.
Missouri stone coal	$23 00	$22 00	$21 00	.....
" charcoal	23 00	22 50	22 00	20 00
Tennessee charcoal	23 00	22 50	22 00	20 00
Tenn. coke very soft and strong	25 00	23 00	22 00	20 00
Hanging Rock charcoal	26 00	24 50	23 50	.....
" " cold short	25 00	24 00	.....	.....
	Ex No. 1	No. 1.	B No. 1.	No. 2.
Alice Hanging Rock coke	$25 50	$25 00	$24 50	$23 00
Quinnimount, W. Va., coke	25 00	24 00	23 50	22 50

San Francisco, Cal.

From the *Commercial Herald* of July 5:

Supplies of pig iron are excessive, and with a restricted demand prices are more or less nominal. The *Colima* carried to Panama en route to New York 194,747 lbs. pig lead. The market for tin plate is dead; prices both low and nominal. Sydney pig tin may be quoted at 18c. The steamer *Australian*, from Sydney, brought 600 ingots tin.

METALS.

NEW YORK, FRIDAY EVENING, July 13, 1877.

The week under review has been the most quiet we have experienced for a long time, every article having been without a particle of life.

Gold Coin.—During the week under review the price of gold has ranged from 105¼ to 105⅝, and closing at 105⅝.

Bullion.—The silver market is stronger and higher abroad, and shows more activity than for several weeks past. If the India exchanges, as is probable, are supporting the market, it will advance, unless Germany should sell largely. We quote in London at 54⅛@54 3-16d.; in this market, 118¼@118⅝: and in San Francisco, at 10 per cent. discount. Gold bars are unchanged.

With reference to the recent shipment of $1,000,000 in silver bullion to China by the Nevada Bank, it is said that this trade will be exclusively controlled by this bank, as it enables silver for London account to reach China much sooner than if shipped from London, for it only has to cross the Pacific Ocean, the telegraph covering the remaining part of the distance. Heretofore these London shipments occupied eighty days, but by this process the time is reduced to one month. Every steamer leaving San Francisco for China now carries out large amounts of silver.

The shipments of treasure by sea and overland from San Francisco during the last fiscal year were $52,215,196. Of this $6,174,625 was shipped in June, the chief items being $4,085,506 gold coin, $783,967 trade dollars, $652,905 silver bars, $276,370 Mexican dollars, $194,000 silver coin, and $181,253 gold bars. California works up almost her entire treasure product now either into coin or bars, so that it is ready for immediate use wherever exported. "Gold dust," which was formerly the chief form of the gold product, amounts to only $222 of the six millions exported in June.

Daily Range of Silver in London and New York per oz.

Date.	London. Pence	New York. Cents	Date.	London. Pence	New York Cents
July 7	53¾	118	June 11	53⅞	118⅛
" 9	53¾	118	" 12	54	118⅛
" 10	53¾	118	" 13	54⅛	118¼

BULLION PRODUCTS.—We give below a statement showing the June bullion output of various mines:

Name of Mine.	Location.	Product.
Arizona	Nevada	$6,210 26
California	"	624,692 76
Con. Virginia	"	335,621 50
Chollar Potosi	"	11,573 00
Grand Prize	"	23,000 00
Northern Belle	"	43,877 94
Leopard	"	18,309 78
Tybo Con.	"	97,628 00
Silver King	"	32,000 00
Hite	California	6,600 00
Minnetta Mill	"	16,000 00
Modoc	"	36,518 00
New York Mill	"	8,527 00
New Coso	"	67,600 00
Golden Chariot	Idaho	35,600 00

Copper.—The business in this article has amounted to but from 200,000 to 300,000 lb. at 19c.@19⅛c., mostly at 19c. Copper to arrive is quoted at 19¼@19¼c. Wallaroo, in London, is offering only in very small lots and held at high prices. There is said to be a large short interest in the brand, having been created with the expectations that a sale would have taken place before this.

Tin.—There is no business of importance doing in this article. Straits, in London, is quoted at £68 per ton, and in Singapore, at $19.62 per picul. We quote in this market as follows: Straits, 16⅛@16¼c.; L. & F., 15¾@15⅞c.; Refined, 16¼c.; Banca, 18c.; and Australian, 16c., prices all in gold.

Tin Plates.—We note a sale of 1,000 boxes of coke tins at $5.75. The market is usually very quiet. We quote, in gold, per box, as follows: Charcoal tins, $6.62½ @ 6.75, and ternes, $6; coke tins, $5.75, and ternes, $5.50@5.62½.

Messrs. Robert Crooks & Co., of Liverpool, under date of June 28, say of tin plates: "Some makers, whose orders are being worked pretty nearly through, show decided symptoms of meeting buyers to induce further specifications. If buyers hold off for a few weeks longer, we hardly see that any other conclusion can be arrived at than that the need for orders will quite generally force makers to accept somewhere in the neighborhood of the late low prices."

Lead.—We learn of nothing doing in this article, which we continue to quote at 5·60c.@5·65c.

Spelter and Zinc.—Without business spelter is quoted at 5¾c.@6¼c. currency, according to quantity and quality. Sheet zinc remains quiet at 7c.@7¼c.

Antimony is weak, being quoted at 11½c@11⅝c. gold.

Quicksilver.—The San Francisco *Commercial Herald* of July 5, says: "The *Mercury* of San Jose seems to be disposed (probably unwillingly) to *bear* the market for this staple. We instance in the late publication in its columns respecting a large prospective supply from the Guadaloupe mine which was promptly refuted, and now the following about the New Almaden: 'The outlook of the New Almaden Quicksilver Mine is unusually promising at the present time. The only trouble with quicksilver mining just now appears to be that the production of the metal is so great as to spoil the market.' A 'quicksilver' correspondent the day following sent a refutation, to wit: '*Ed. Mercury:* Your flattering notice of the New Almaden Quicksilver Mine is hardly justified by the facts. The number of men now employed is less than at any time before, and of nine furnaces at its works only three are in operation, from which it must be evident that the present very low prices for quicksilver—42 cents against 75 cents on the first of January, 1876—works to the prejudice of Santa Clara County's principal manufacture, which is quicksilver.' Our market exhibits continued firmness with a light stock, price 42c. It is said that the outgoing steamer, *Oceanic*, for Hongkong will carry about 1,000 flasks. The *Colima* for Callao carried 249 flasks. At the close the *J. B. Ford* for Mazatlan carries 190 flasks.

"Our monthly receipts of this article compare with 1876 as follows:

Month.	1876 Bay Flasks.	1876 Coast Flasks.	1877 Bay Flasks.	1877 Coast Flasks
January	3,877	281	5,087	327
February	3,864	62	7,118	183
March	3,762	154	5,932	409
April	4,323	317	5,882	233
May	4,954	304	6,840	212
June	5,368	362	5,305	327
Totals	26,138	1,480	35,264	1,691

Our exports by sea for June 1866-7 were as follows:

To	1876 Flasks.	1876 Value.	1877 Flasks.	1877 Value.
China	3,611	$144,459	5,218	$169,340
Mexico	710	28,175	1,241	39,417
Australia	185	7,277	....	....
South America	107	4,477	349	11,211
Japan	79	2,790	....	....
New Zealand	....	....	10	321
Victoria	....	....	1	33
New York	100	3,325	....	....
Central America	....	....	3	103
Totals	4,783	$191,003	6,822	$220,425

Salt Lake Ore and Metal Market.

SALT LAKE CITY, UTAH, July 13, 1877.

Argentiferous Lead (Base Bullion).—$60 to $65 per ton for lead. $1.18½ per ounce for silver. $20 per ounce for gold. The quotations for silver are based upon the silver contents in the lead of 70 ounces per ton of 2,000 lb.

The *Inter-Ocean* correspondent, under date of 2d inst., says: "The shipments of ore and bullion for the week ending June 30 are as follows: 5 cars bullion to New York, 8 cars bullion to Omaha, 13 cars bullion to Pittsburg, 1 car copper ore to Baltimore, 11 cars lead ore to Pittsburg, 27 cars lead ore to Sacramento. Total bullion, 546,862 lb.; lead ore, 797,090 lb.; copper ore, 21,500 lb. Grand total, 1,365,452 lb. Of the above 65 cars, 32 went West from Ogden and 33 East.

"The smelters are holding for $65 for lead, and $1.20 per ounce for silver, which is about as low as it can be made in this Territory, and though the freight has been reduced $6.50 per ton to New York, there is not over $10 per ton for refining at the above figures, and $14 per ton is as low as it can be worked."

The *Tribune* of the 7th inst. gives the following as the bullion output for the month of June:

Base bullion, 1267 tons at $175	$211,725 00
Silver lead ore, 780 tons at $100	78,000 00
Silver bullion from the Ontario to June 27,	160,000 00
Estimate of 3 days' product	20,000 00
Silver bullion from Leeds (estimated)	60,000 00
Silver bullion from the Shoebridge mills, Tintic	6,980 60
Silver bullion from the Wyoming mills, Tintic	9,806 80
Gold bullion from the Crismon, Tintic	35,000 00
Gold dust from Bingham	5,000 00
Total	$569,586 40

"In April the exports of lead and precious metals amounted to $801,000 86 against $586,512 40 for June, or a decrease of $241,488 46, caused principally by the decline in the shipments of lead and its price.

"The Union Pacific Railroad Company's Express has received and shipped gold and silver bullion from June 1st to 29th, inclusive, as follows:

Ontaria, Park City	$133,680 38
Wyoming mill, Tintic district	9,158 52
Shoebridge mill, do	7,588 90
Crismon mill (gold) do	19,000 00
Total	$169,427 80

"The freight on bullion from Utah to New York has finally been fixed at $27.50, the old price, or $5 less than it was when the bottom fell out of the lead market. It is shipped all the way by rail. The Union Pacific Company's proportion of the reduction is $1, the remaining $4 reduction being made by the roads east of Omaha. Five dollars taken off the freight on a ton of bullion is something, but it will not go far to restore mining in this Territory to its former activity, as the decline in the price of lead reduced its marketable value over $20 per ton."

Mr. J. B. Meader, under date of the 7th inst., reports the following:

Shipments of base bullion for June	2,580,151 lbs.	
" " " " " 5 months	20,093,598 lbs.	
Total for 6 months	22,673,749 lbs.	
Ore shipments for June reduced to lead	707,980	
Ore shipments for 5 months reduced to lead	3,735,461	4,443,441 lbs.
Total shipments of lead for 6 months	27,117,190 lbs.	

FINANCIAL.

New York Stocks.

NEW YORK, Friday evening, July 13, 1877.

The business in the coal stocks has differed but little in amount from the previous week. Prices for the first three days had a decided upward tendency, largely the result, perhaps, of a covering of the short interest. The two following days showed considerable weakness, while to-day prices have advanced considerable and close firm. Mr. Gowen will arrive here (to-morrow or Sunday) on the next White Star steamer, and his appearance will undoubtedly be used to influence the price of stocks, which may effectually be done until he gives some definite expression of his future policy. It does not appear possible that any arrangement for the improvement of the trade can be entered into this year, not even to suspend production for a certain time.

The sales of Delaware & Hudson Canal Co. stock has amounted to 36,060 shares at from 33⅝ @ 39¼, closing at 35¼. New Jersey Central R. R. has ranged from 8 to 10, closing at 9, with sales of 7,067 shares. The business in Delaware, Lackawanna & Western R. R. has aggregated 160,276 shares at from 37¼ to 43¼, closing 39⅝. This company held a meeting on the 12th inst. to consider the rate of interest which it would allow on its recently authorized $10,000,000 mortgage; no conclusion was arrived at. Another meeting for the consideration of the subject will be held next week, when it is generally believed the 6% will be the amount finally allowed. The rumor that the Delaware & Hudson Canal Co. proposed issuing a loan for $10,000,000 is officially denied.

Block House Coal Mining Company.—The July coupons due on the bonds of this company will be paid upon presentation.

Pennsylvania Coal Company—We quote an auction sale of 20 shares of the stock of this company at $157 per share.

Bonds have been very active during the week, the total transactions reaching $250,575. The principal dealings have been in the convertible and consolidated bonds of the New Jersey Central Railroad Company, and the consolidated bonds of the Lehigh & Wilkes Barre Coal Company. The quotations have generally been well maintained, and the majority close at nearly the highest prices of the week.

Philadelphia Stocks.

PHILADELPHIA, FRIDAY EVENING, July 13, 1877.

A slight advance is noticeable in the quotations of the coal shares at Philadelphia. The market, on the whole, has been in a very unsatisfactory condition throughout the week, and the quotations in all instances quite irregular. The *Ledger* of the 11th inst., when prices were at their highest, says: "In this market, whether from some general cause affecting both markets alike, or that this market sympathizes with that in the upward movement, or because of some combination to put up prices that they may buy them in for delivery at lower figures, we cannot pretend to determine. It is certain, however, that the stock market just now is very strong. Everybody almost has more or less of money to invest, and are only awaiting to be assured that lowest prices have been touched. That point decided in the affirmative, and a large amount of awaiting cash will go into investments. The fear of a setback alone makes investors halt. There is still a good demand for all the better class of loans, but if share prices hold their present advance a few days the fact will beget a confidence in them that will divert attention from the higher priced, because supposed more secure loans. Still, a good many people will invest only in the most reliable securities, preferring them at a heavy premium to shares far below par. And yet it is very certain that bonds, as the rule, are at their highest, and reasonably certain that the shares of our better class of companies offer margins for an advance." With the exception of Reading stock, which closes at nearly the highest point of the week, the market shows declines ranging from 1¼ to 4 per cent., the latter Pennsylvania Railroad stock.

COUPONS AND INTEREST are due on the bonds of the following companies during the present month, in addition to those announced in our issue of the 30th ult.:

Alleghany Valley Railroad Company.—7-30s. of 1896; interest.

Elmira & Williamsport Railroad Company.—1st mortgage 7s. 1880; interest.

Harrisburg Railroad Company.—1st mortgage 6s; interest.

Pennsylvania Railroad Company.—1st and general mortgage 6s.; interest.

Philadelphia & Reading Coal and Iron Company.—1st mortgage 7s.; interest.

Western Pennsylvania Railroad Company.—6s.; interest.

Chesapeake & Delaware Canal.—6s.; interest.

Delaware Division Canal.—6s.; interest.

Pennsylvania Canal.—6s.; interest.

Schuylkill Navigation Company.—2d mortgage 6s., and convertible mortgage 6s.; interest.

Wilmington & Reading Railroad Company.—2d mortgage 7s.; interest.

East Pennsylvania Railroad Company.—This company has declarsd a dividend of $1.50 per share; payable on July 17.

East Mahanoy Railroad Company.—This company has declared a dividend of $1.50 per share; payable on the 11th inst.

Little Schuylkill Navigation Railroad & Coal Company.—This company has declared a dividend of 3½ per cent.; payable on the 13th inst.

The dividend period of the following companies occurs during the present month:

Harrisburg, Lancaster & Columbia Railroad.
Minehill Railroad Company.
North Pennsylvania Railroad.
Lehigh Valley Railroad Company.
Schuylkill Navigation Company, common and preferred stock.
Buck Mountain Coal Company.
Fulton Coal Company.
Nescopee Coal Company.
Emaus Iron Company.

The Mount Carbon and Port Carbon Railroad Company announces a dividend of 6 per cent., payable July 18.

The Schuylkill Navigation and Railroad Company announces a dividend of 2½ per cent., payable July 18.

The Mill Creek and Mine Hill Navigation and Railroad Company announces a dividend of 5 per cent., payable July 18.

Pennsylvania Salt Manufacturing Company.—100 shares of this company were sold at auction during the week at $65 per share.

Piedmont Coal and Iron Company.—350 shares of the stock of this company were sold at auction during the week at ½ per cent.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here and at Philadelphia, for the week ending the 13th inst. are given in the following tables. The Philadelphia quotations will have a * affixed.

STOCKS.

	Quotations.—Highest.	Lowest.	Closing.	Sales Shares.
American Coal Co	—	—	25	—
*Cambria Iron Co	—	—	55	—
*Pennsylvania Salt Manf'g Co.	—	—	64	—
*Westmoreland Coal Co	—	—	55	—
*Buck Mountain Coal Co	—	—	40	—
*Schuylkill Nav. Co	—	—	—	—
St. Louis, I. M. & S. RR. Co	10	5½	6	1,246
Spring Mountain Coal Co	—	—	30	—

BONDS.

D., L. & W. 7s, Convt., 1892	J. & D.	—	—	100½	—
" " 2d mtge., 1881	M. & S.	—	—	107	—
N. J. C., 1st mtge., new	F. & A.	112¼	111	112¾	$11,000
" " 1st mt., cons. 1893	Q.	62¾	59½	41¼	42,000
" " Convt	M. & N.	59	53½	58	56,000
L. & W. B. Coal Co., cons.	Q.	24	22	23	50,000
Am. Dock & Imp. 7s	J. & J.	—	—	41	—
D. & H. C. Co., 1st m., 1884	J. & J.	90	89½	89	2,000
" " " " 1891	J. & J.	90½	—	91	5,000
" " " " 1877	J. & J.	—	—	99	—
" " " " reg., 1894	A. & O.	91½	90	91	4,000
" " " " coup., 1894	A. & O.	—	—	91	—
St. L. I. M. & S., 1st mt. 1892	F. & A.	103½	101½	103	8,000
Ches. & Ohio, 1st mt., 1899	—	—	—	—	—
*L. V. RR., con. m. 6s, 1923	J. & D.	90	—	89½	1,000
" " 2d m., 7s, 1910	M. & S.	112	111½	111	3,000
" " reg., 1898	J. & D.	—	—	108	—
" " coup., 1808	J. & D.	108	107½	108	2,000
*P. RR., 1st mtge., 1880	J. & J.	105¾	104½	—	4,000
" Gen. mtge. reg., 1910	A. & O.	108	107	—	4,000
" Con. m. 6s, cou. 1905	J. & D.	—	—	108	—
" " " reg. 1905	Q.	93	—	93	1,000
" gen M. Coup., 1910	J. & J.	105¾	—	105½	1,000
" New Loan 5s	—	107	106¾	—	23,000
*P. & R. RR., 7s, 1893	A. & O.	—	—	107	—
" " con. m. 7s. cou. 1911	J. & D.	93¾	—	93	6,000
" " Deb. 6s, 1893	J. & J.	—	—	38	—
" " New convt. 7s. 1893	J. & J.	45⅛	45	—	2,000
" " Con. mtge. 7s. reg.	J. & D.	92¼	92	93½	8,000
" " 6s. 1844-8c	J. & D.	—	—	—	—
*P. & R. C. & I. Co. Deb. 7s	M. & S.	—	—	—	—
*P. & R. C. & I. Co.	—	—	*46	—	1,000
*L. C. & N. Co. 6s, 1884	M. & Q.	101½	101	101¼	1,375
" " RR. loan 1897	F. & Q.	—	—	101½	—
" " Con. mtge. 7s.	J. & D.	—	—	—	—
" " Cvt. gold, 1894	M. & S.	—	—	93	—
" " Gold Loan, 1897	J. & D.	87½	87	87	10,000
*Schuylkill Nav., 6s. 1897	M & Q.	—	—	—	—
*Pa. and N. Y. Canal, 7s	J. & D.	109	108¾	108¾	5,000
*Pa. Canal Co	J. & J.	—	—	88	—
*Susquehanna Coal Co. 6s.	—	—	—	—	—

Total transactions for the week $250,575

Copper Stocks.

Reported by Wilson W. Fay & Co., Bankers and Brokers Room 7, Traveler Building, 31 State Street.

BOSTON, THURSDAY EVENING, July 12, 1877.

The market for the week has been very quiet, with a tendency to be firm in the principal stocks, and very little doing in most of the smaller ones.

Calumet & Hecla is looking stronger, having advanced from 169 to 170 bid, there being sales at 169¾, 170, 170¼, and a few shares selling as high as 170½, and the stock closing at 170 bid and 170¼ asked.

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

Name and Location of Company.		Feet on Vein.	Capital Stock	Shares. No.	Par Val.	Assessments. Total levied to date.	Date and amount per share of last. Mo.	Yr.	Amt.	Dividends. Total paid to date.	Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	Highest and Lowest Quo. per Share in Currency. July 7. H.	L.	July 9. H.	L.	July 10. H.	L.	July 11. H.	L.	July 12. H.	L.	July 13 H.	L.	Sales.
Coal Stocks.			$			$				$																	
Consol. Coal	Md.	....	10,250,000	102,500	$100	... ..	.....	.....	.....	...	Jan..	1877	2½	5	..	..	..	..	..	..	..	..	..	..	..	..	..
Del. & H. Canal	Pa.	....	20,000,000	200,000	100	.....	.....	.....	.....	38,522,920	Aug.	1876	4	8	35¼	35¼	38⅛	36¼	39¼	37	38	36	36¼	34	35½	33⅜	36,060
Del., Lac. & W.RR.	Pa.	....	26,200,000	524,000	50	.....	.....	.....	.....	...	Apr.	1876	2½	10	37⅝	37¼	40½	37⅜	43¾	41½	43	40⅞	41⅛	37⅞	40½	37½	160,276
Lehigh C. & N	Pa.	....	10,448,550	208,971	50	.....	.....	.....	.....	...	Sep.	1876	1¾	6	18⅜	18¼	18⅝	18⅜	19¼	18⅞	19¼	18⅞	18½	18⅛	18¾	18⅝	6,500
Lehigh Valley RR.	Pa.	....	27,042,900	540,858	50	.....	.....	.....	.....	....	Apr.	1877	1½	6	32¼	32¾	33¼	32½	34½	33	35¾	35	35½	34½	34¾	34⅜	8,963
Maryland Coal	Md.	....	4,600,000	44,000	100	.....	.....	.....	.....	...	Jan..	1876	1½	1½	..	..	..	..	..	..	..	..	..	..	..	8	....
N. J. Central RR.	Pa.	....	20,600,000	206,000	100	.....	.....	.....	.....	....	Apr.	1876	2½	10	8½	8	9¼	8¾	10	9¾	9¾	9⅝	9¾	9	9¼	8¾	7,067
Penna. Coal	Pa.	....	5,000,000	100,000	50	.....	.....	.....	.....	....	Feb.	1877	5	20	..	..	..	..	..	..	..	..	..	..	..	130	....
Pennsylvania RR.	Pa.	....	68,868,700	1,377,376	50	.....	.....	.....	.....	....	Feb.	1877	2	8	31¼	30½	32	31¼	33⅛	32⅛	33¾	32¼	32	31⅜	31⅞	31¾	134,184
Phil. & Read. RR.	Pa.	....	34,278,755	685,575	50	.....	.....	.....	.....	....	Jan..	1876	2½	10	11¾	11⅝	11⅞	11⅝	12⅜	11⅞	12⅛	12	12¼	12	12¼	12⅛	8,798
General Mining Stocks																											
Alpha Cons. G. S.	Nev.	300	3,000,000	30,000	100	180,000	Aug.	1875	$1 00	....	.....	.....	.....	..	10¾	..	13¼	..	13	12¾	14	13¾	14⅜	14⅛	..	..	1,000
Am. Flag, G	Colo.	5,300	600,000	60,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	8c	..	8c	..	8c	..	10c	9c	10c	9c	..	..	5,500
Belcher. G. S.	Nev.	1,040	10,400,000	104,000	100	864,400	Feb.	1877	1 00	15,397,200	Apr.	1876	$1 00	12	5½	..	5¾	5½	..	..	4⅜	4¾	..	..	..	..	700
Bertha, G	Vir.	645 acs.	300,000	30,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Best and Belcher, G. S.	Nev.	545	10,080,000	100,800	100	236,992	Feb.	1877	1 00	....	.....	.....	.....	..	20	19¾	21	20½	..	..	..	..	20	19½	..	..	1,100
Bobtail, G	Colo.	2,500	1 136,630	227,326	5	**	.....	.....	.....	.....	.....	.....	.....	..	1½	..	1⅝	1.45	1.55	1½	1.55	1.45	1½	..	..	..	3,600
Bobtail Tunnel, G	Colo.		100,000	20,000	5	6,000	July	1873	0 30	20,000	Dec..	1876	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Bullion, G. S.	Nev.	943½	10,000,000	100,000	100	2,552,000	June	1877	1 50	....	.....	.....	.....	..	6	..	6¼	6½	6⅜	6¼	7½	..	5¾	..	7⅜	7¼	1,850
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,360,000	June	1877	50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
California, G. S.	Nev.	600	54,000,000	540,000	100	...	.....	.....	.....	15,120,000	June	1877	2 00	24	36¾	36½	36½	..	36¾	36⅝	..	..	36⅝	36½	36⅛	36¾	1,200
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,338,000	May.	1877	2 00	3,080,000	Feb..	1872	1 00	12	35¼	35	33½	..	32¾	..	..	..	34½	34⅜	33	32⅜	1,300
Cleveland, G	Colo.	3,715	250,000	25,000	10	**	.....	.....	.....	....	.....	.....	.....	.	8⅜	8¼	8½	..	8⅞	8¾	9	8¾	9	..	9	8¾	2,600
Cons. Hercules & Roe	Colo.	16,500	1,000,000	100,000	10	**	.....	.....	.....	120,000	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	1⅛	..	....
Cons. Imperial. G. S.	Nev.	468	50,000,000	500,000	100	475,000	May.	1877	0 20	....	.....	.....	.....	..	1¾	..	1¾	1⅜	..	..	..	..	..	..	1⅛	..	650
Con. N. Slope & E.C.T.	Colo.	15,000	500,000	10,000	50	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,600	June	1873	3 00	29,160,000	June	1877	2 00	24	36¾	36¼	37¾	37⅞	..	..	39¼	..	37½	..	38⅛	38	1,050
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8 ⅓	..	..	..	..	..	6⅛	6	..	..	..	..	..	..	400
Crown Point, G, S	Nev.	600	10,000,000	100,000	100	1,473,370	June	1877	1 00	11,588,000	Jan..	1875	2 00	24	4½	..	4½	4¼	4⅜	4⅛	4⅜	4¼	..	..	4¾	4⅛	1,600
Douglas	Colo.	21,000	1,000,000	10,000	100	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Eureka Cons. G. S. L.	Nev.	..	5,000,000	50,000	100	100,000	May	1876	1 00	1,000,000	Aug.	1875	1 00	..	21¾	21½	22	..	..	..	..	..	26⅜	26⅛	..	..	600
Eureka G. Mg. G	Cal'f		2,000,000	20,000	100	.....	.....	.....	.....	2,094,000	May.	1877	2 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Exchequer, G. S.	Nev.	400	10,800,000	100,000	100	280,000	Sept.	1876	1 00	....	.....	.....	.....	..	6¾	..	6⅝	6½	..	..	..	..	..	..	..	..	500
Gould and Curry, G. S.	Nev.	621	10,800,000	108,000	100	2,242,000	Apr.	1877	1 00	3,934,800	Oct..	1870	10 00	..	13	12½	14¼	14	13¼	13	14¼	14⅛	14	13¾	13⅝	..	2,350
Granville Gold	N. C.	9,000	1,000,000	100,000	10	**	.....	.....	0 50	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	10	2,410,000	Apr.	1877	.....	1,598,000	Apr.	1871	1 00	12	5¼	..	6	5½	..	..	5¾	5⅝	5¼	5	5½	..	1,500
Henry Tunnel	Nev.	3,000	2,000,000	80,000	25	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Hukill, G. S	Colo.	3,288	1,000,000	100,000	10	**	.....	.....	.....	40,000	May.	1877	0 10	12	3⅝	..	3½	..	..	..	..	..	3⅝	..	..	..	200
Indian Queen, S	Nev.	1,000	3,000,000	60,000	50	....	.....	.....	.....	60,000	Dec..	1875	0 50	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Julia Cons., G. S.	Nev.	3,000	11,000,000	110,000	100	330,000	Apr.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	2⅞	2¾	200
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	1,060,000	June	1877	1 50	....	.....	.....	.....	..	..	..	..	..	9	8¾	..	..	8¾	8½	8¾	8¾	1,000
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	270,000	Dec..	1874	1 00	1,252,000	Mar.	1870	5 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Kossuth, G. S.	Nev.	2,700	5,400,000	108,000	50	405,000	Aug.	1876	0 50	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Lacross	Colo.	3,900	1,000,000	100,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	35c	33c	34c	33c	36c	33c	36c	34c	35c	34c	..	..	9,400
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	75,000	Mar.	1876	1 00	162,500	Dec..	1876	0 50	..	1½	..	1½	1¼	1⅜	1¼	1⅜	1⅛	1⅜	1¼	1⅜	..	2,800
Lucerne Mining	Colo.	4,200	5,000,000	500,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Mariposa, preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00	....	.....	.....	.....	..	..	..	3	..	..	..	..	..	..	..	..	..	100
" common	"	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Memphis	Colo.	6,000	500,000	60,000	8⅓	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Merrimac, S	Mass.	1,500	500,000	50,000	10	**	.....	.....	.....	65,000	June	1877	4 00	12	6¼	6½	6⅝	6½	..	..	6½	..	..	..	..	..	535
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	151,200	June	1877	0 40	....	.....	.....	.....	..	..	..	..	..	..	..	12½	12	12¾	..	12⅜	12⅛	750
Moose	Colo.	39,000	2,000,000	200,000	10	...	.....	.....	.....	.....	.....	.....	.....	..	4⅞	..	4¾	4¼	4⅜	4¼	4¾	4⅞	4⅝	4⅜	4½	4¼	10,200
N. Y. & Colo., G	Colo.		1,000,000	50,000		**	.....	.....	.....	20,000	Mar.	1877	0 20	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Northern Belle, S	Nev.	1,600	5,000,000	50,000	100	....	.....	.....	.....	1,250,000	June	1877	1 00	..	..	..	..	..	..	..	..	..	18⅝	18½	..	..	260
Ontario	Utah	3,000	10,000,000	100,000	100	.....	.....	.....	.....	300,000	July	1877	1 00	12	..	..	20¼	20½	21	20⅞	21⅛	..	21¼	..	..	..	1,900
Ophir, G. S	Nev.	675	10,080,000	100,800	100	2,934,400	May.	1875	2 00	1,394,400	Mar.	1874	4 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Original Comstock, G.S	Nev.	....	10,000,000	10,000	100	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	2,452,680	June	1877	3 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Pleasant View, G	Colo	1,200	200,000	20,000	10	**	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Quicksil. preferred	Cal.	8,500	4,291,300			**	.....	.....	.....	.....	.....	.....	.....	..	..	..	24	..	..	..	..	13¾	13½	15½	15⅝	15⅜	15¼	..	..	700
" common	"	acres.	5,708,700	100,000	100	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	14½	..	..	..	..	..	..	..	..	..	....
Raymond and Ely, G.S.	Nev.	5,000	3,000,000	30,000	100	540,000	Dec.	1876	1 00	3,075,000	Sept.	1873	3 00	..	..	..	..	..	..	..	..	..	..	..	..	..	700
St. Joseph, L	Mo.	2600 acs.	1,000,000	100,000	10	....	.....	.....	.....	250,000	.....	.....	.....	..	..	..	..	..	9⅝	..	9⅞	..	..	..	..	..	350
Santiago, G. S.	Nev.	2,000	11,200,000	112,000	100	.....	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	400
Savage, G. S.	Nev.	800	11,200,000	112,000	100	3,094,500	May.	1877	1 00	4,460,000	June	1869	3 00	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Seaton, G. S.	Colo.	1,700	500,000	50,000	10	**	.....	.....	.....	10,000	May.	1877	0 10	12	1¾	1⅝	1⅞	..	7⅛	7	..	..	1⅛	..	..	..	200
Seg. Belcher. G. S	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Sierra Nevada G. S.	Nev.	3,650	10,000,000	100,000	100	1,700,000	June	1877	0 50	....	Jan..	1871	1 00	..	..	..	..	..	..	..	..	..	..	..	..	..	940
Silver City, G S	Nev.	3,900	6,310,000	63,100	100	15,775	Nev.	1876	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Silver Hill, G. S.	Nev.	5,400	5,400,000	54,000	100	918,000	Apr.	1877	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
South Comstock, G. S.	Nev.	1,500	10,000,000	100,000	100	54,000	Jan	1877	0 25	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
South. California, G. S.	Nev.	1,500	5,000,000	50,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Southern Star. G. S.	Nev.	1,500	6,000,000	600,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Trenton, G. S.	Nev.	..	10,000,000	100,000	100	....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Union Cons., G. S.	Nev.	850	10,000,000	100,000	100	260,000	Mar.	1876	1 00	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
West Belcher, G. S.	Nev.	1,000	10,000,000	100,000	100	.....	.....	.....	.....	....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	2,838,000	Mar.	1877	1 00	2,184,000	Aug.	1871	2 50	..	13	..	..	..	..	..	..	..	..	..	..	..	....
Young America, S	Nev.	1,000	3,000,000	30,000	100	6,000	Oct..	1876	0 20	...	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Boston Stocks.																											
Allouez, C	Mich.	..	1,000,000	20,000	50	940,000	May.	1876	5 00	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Calumet & Hecla, C	Mich.	..	2,000,000	80,000	25	1,200,000	.....	.....	.....	11,450,000	Feb.	1877	5 00	20	....	....	....	....	....	....	....	....	....	....	....	....	....
Central, C	Mich.	..	500,000	20,000	25	100,000	June	1862	0 65	1,160,000	Feb.	1877	7 00	28	....	....	....	....	....	....	....	....	....	....	....	....	....
Copper Falls, C	Mich.	..	1,000,000	20,000	50	535,000	May.	1876	.....	100,000	Nov.	1871	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Dana, C	Mich.	..	500,000	20,000	25	68,000	Jan..	1863	0 50	...	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Dawson, S	Ont.	..	1,200,000	60,000	20	....	.....	.....	.....	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Duncan, S	Ont.	..	1,200,000	60,000	20	75,000	July.	1876	4½	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Franklin, C	Mich.	..	500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Humboldt, C	Mich.	..	500,000	20,000	25	100,000	Sept.	1876	0 15	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
International, S	Ont.	..	1,200,000	60,000	20	....	.....	.....	.....	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Madison, C	Mich.	..	500,000	20,000	25	123,000	Sept.	1876	0 10	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Mesnard. C	Mich.	..	500,000	20,000	25	160,000	Apr.	1876	0 50	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Minnesota, C	Mich.	..	1,000,000	20,000	50	436,000	June	1876	1 00	1,820,000	Mar.	1876	0 50	..	....	....	....	....	....	....	....	....	....	....	....	....	....
National, C	Mich.	..	500,000	20,000	25	195,000	Oct..	1875	1 00	360,000	Oct..	1873	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, C	Mich.	..	1,000,000	40,000	25	880,000	May.	1876	2 00	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Petherick, C	Mich.	..	500,000	20,000	25	165,533	Mar.	1876	0 50	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Pewabic, C	Mich.	..	500,000	20,000	25	185,000	June	1868	3 00	460,000	July	1873	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Phœnix, C	Mich.	..	1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Quincy, C	Mich.	..	200,000	20,000	10	....	.....	.....	.....	2,130,000	Feb.	1877	4 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Ridge, C	Mich.	..	500,000	20,000	25	200,000	.....	.....	.....	90,000	Feb.	1875	1 00	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Rockland, C	Mich.	..	500,000	20,000	25	495,000	Jan..	1874	1 00	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Star, C	Mich.	..	500,000	20,000	25	265,000	Mar.	1876	0 50	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....
Superior, C	Mich.	..	500,000	20,000	25	340,000	Mar.	1874	0 25	....	.....	.....	.....	..	....	....	....	....	....	....	....	....	....	....	....	....	....

G. Gold. S. Silver. L. Lead. C. Copper. ** Non-Assessable.

Total Assessments levied to date $42,775,530
Total Mining Dividends disbursed to date 115,887,900

Total Sales of Coal Stocks for the week ..... 361,848 share
Total Sales of Mining Shares for the week ..... 58,075 "

Copper Falls remains about the same, having advanced slightly to 3 1-16 bid, and not much stock offering less than 3.25.

Central is just exactly where it has been for the last three weeks, there being no prospect of any change at present, it hanging firm at 38½ bid.

Franklin is quiet, and, consequently, there is not much change, $5.50 being bid, and $7.50 asked. Quincy is firm at 35½ bid, there being sales at 36½, and the stock closes at 35⅛ bid, and 36½ asked.

The smaller coppers are very still, there being very few sales of any of them, and no sales at all of some.

The silver stocks have been rather lively, but very weak, the desire being to sell rather than buy. Duncan has kept falling steadily, but is now 1.31 bid, and 1.37 asked, there being sales during the week at 1.00, 87½, 85, 80, and 75.

International has dropped from 25 to 23, there being 1,000 shares sold at 25, and closing at 24 bid and 27 asked. The price of ingot copper remains at 19¾@ 19⅝, which does not look very promising for the small mines, as they can make no money at that price, but with a better price for copper we would have a better and more active market on stocks.

Duncan silver has rallied again this evening, and is now quite strong at 1.31 bid, and 1.37 asked.

Gold and Silver Stocks.

NEW YORK, FRIDAY EVENING, July 13, 1877.

The business at the New York Mining Stock Exchange continues to be quite insignificant, the sales for the week having aggregated 37,025 shares, a very large proportion of which was washed business. Moose occupied the attention to the extent of 10,000 shares, Leopard 2,800, Gould & Curry 2,350, and the other stocks in smaller quantities. The consolidation of the two mining boards is progressing as satisfactorily as can be expected, and will probably be a fact before our next issue.

We have been unable to procure official reports that had been promised of the progress of work at some of the mines quoted at this board, notably Seaton and Hukill. Those interested in the stock naturally desire such information, and we shall endeavor to furnish it from the best sources attainable.

The Ontario Silver Mining Company will pay a dividend of $50,000 in gold on the 16th inst. A communication to the company's office here dated Salt Lake, July 5, says that "the chutes in the mine and all the ore pockets are full of ore, and 3,500 tons on hand at the mill. Shaft has gone four feet into the vein, and no signs of foot wall yet. Ore will average 300 ounces, but is base; 300 east, has cut the eastern ore body big and rich, and the stopes throughout the mine are looking and yielding well." The company produced for the month of June, 1877, 100 bars of bullion, assay value $173,328.85; ore sales, 21 tons, $3,612.40. Total production, assay value, $176,941.25.

The Great Western Quicksilver Mining Company of California has declared a dividend of 25 cents per share.

The Loyal Lead Mining Company, whose works are in Amador County, Cal., have abandoned work. The property has been attached by the miners for $2,000.

The Grover Gold Mine, in Amador County, Cal., is crushing 35 tons of ore per day, averaging about $15 per ton, the ore being supplied from the stopes of the 700-foot level, where the ore vein is 25 feet in thickness. This company gives employment to about 60 men.

The Montirichard Gold Mine.—In Amador Co., California, recently made a crushing of 300 tons of rock which gave an average yield of $8 50 per ton. The Amador *Ledger* of the 23d ult. says: "Although $8 50 per ton is considered an excellent yield by mining men, still that sum no more than covers the actual expenses of mining and milling as things have heretofore been conducted at the Montirichard. Negotiations are pending for the sale of the property to San Francisco capitalists."

Rye Patch Consolidated Mining Co.—At a recent meeting of this Company, the reports showed that the company have no liabilities, but have $6,500 in the Treasury, and are crushing ten tons of ore daily, on which there is a profit of $300 to $400.

Camanche Mill and Mining Co.—The dividends paid by this company aggregate $47,500. The present assessment on the stock of 50c. per share aggregates $25,000.

The Empire Gold Mining Co. of Sierra County, Cal., has declared a dividend of $1 per share, payable on demand.

Galena Silver Mining Co.—4,000 shares of the stock of this company were sold at auction during the week at 20 cents per share.

Grand Prize Silver Mining Company of Nevada.—We note the statement that this company is reducing on an average of nearly 20 tons of ore per day, worked by a dry process, and it returns from 90 to 95 per cent. of the assay value of the ore, which renders the tailings of so little value that no effort is made to save them. The bullion produced is never less than .995 fine, and very frequently assays .999½. Recent sales of this stock on the San Francisco stock market were made at $10½ per share.

McCrackin Consolidated Silver Mining Company of Arizona.—We note a recent auction sale of 1,000 shares of the stock of this company in San Francisco at $1.50 per share.

New York Mining Stock Exchange.—The total transactions for the week amounts to 21,150 shares, an increase of 3,420 shares compared with last week.

Sales.

Atlantic.....	1,800 shares	$7 12½@	$6 87½
Central.....	50 "	@	40 00
National.....	1,300 "	@	25

Closing Quotations.

	Bid.	Asked.		Bid.	Asked.
Allouez..	2 00	5 00	Mesnard.	50	1 00
Atlantic..	6 50	7 00	National.	25	40
Cal'tHecla	169 50	70 50	Osceola..	18 75	21 00
Central..	39 25	40 50	Pewabic.	1 00	1 75
Franklin.	5 00	8 00	Quincy..	35 00	37 00
Ma lison.	70	1 00	Ridge....	2 00	3 00

Gas Stocks.

NEW YORK, FRIDAY EVENING, July 13, 1877.

We are reported no transactions in gas stocks, and no improvement in the dull condition of the market prevailing for a long time past.

Williamsburg Gas Company.—50 shares of the stock of this company were sold at auction during the week at from 118 to 119 per cent.

New York Gas Company.—26 shares of the stock of this company were sold at auction during the week at $126½ per share.

Lighting the Twenty-fourth Ward of New York.—The Gas Commission on the 9th inst. awarded to the Yonkers Gaslight Company the contract for lighting seventy-five lamps in Riverdale, in the Twenty-fourth Ward, for the five and a half months ending December 31, at $15.45 per lamp. This is equal to about $34 per year for each lamp, or $2,550 for the whole contract at that rate.

The Gloucester (N. J.) Gas Question.—At a meeting of the Gloucester Common Council on the 5th inst. the Lighting Committee reported that the gas company refuses to make any reduction in the price charged the city for gas—$3.15 per thousand feet—but the company will agree to take charge of and furnish gas to the lamps for $35 each yearly.

Montreal Gas Company.—We note recent sales of 200 shares of the stock of this company at from 147½ to 148 per share.

The Chicago Gas Difficulty Settled.—At a meeting of the Chicago Common Council on the 9th inst., the following resolution was adopted: "That the offer of the Chicago Gas Light & Coke Company to furnish gas at $1.65 per 1,000 cubic feet, from May 1, 1877, to May 1, 1878, and the offer of the People's Gas Light & Coke Company to furnish gas from Oct. 1, 1876, to May 1, 1878, at $2 per 1,000 cubic feet, be accepted."

Companies in New York and vicinity.	Capital Stock.	Par.	Dividends. Rate per an.	Dividends. Am. of last.	Dividends. Date of last.	Quotat'ns Bid.	Quotat'ns As'd
	$						
Mutual, N. Y.....	5,000,000	$100	10%	2½	Apr. '77	94	95
" Gold Bonds	90,000	1,000	7%	3½	Feb. '77		107
N. York "	4,000,000	....	10%	5	May '77	125	130
Metrop. "	2,500,000	100	10%	5	June '77	130	132½
" " Certf.	1,000,000	....	7%	3½	" "	100	103
" " Bonds	500,000	1,000	7%	3½	" "	102	—
Harlem "	1,850,000	50	8%	4	July '77	98	104
Manhat. "	4,000,000	50	....‡	5	July '77	190	195
Brooklyn, B'klyn.	2,000,000	52	15%	5	July '77	150	160
Nassau, " ...	1,000,000	25	....‡	4	July '77	—	80
" " Certf.	700,000	1,000	7%	3½	July '77	95	100
People's, " ...	1,000,000	10	....‡	3½	July '76	—	40
" " Certf.	300,000	1,000	7%	3½	July '77	80	85
" " B'ds	325,000	....	7%	3	Feb. '77	90	96
Metrop. "	1,000,000	10	5%	2½	May '77	65	70
Wmsb'rg "	1,000,000	50	10%	3	Apr. '77	115	121
" " Certf.	1,000,000	....	7%	3½	July '77	100	102
Citizen's "	1,200,000	20	....‡	4	Jan. '77	95	80
" " Certf.	320,000	1,000	7%	3½	Apr. '77	97	100
J. C., N. J.....	750,000	20.	10%	5	July '77	160	—
Cent. Westch. N.Y	466,000	50	7%	4	July '77	85	90
Subur'n " "	295,000	50	7%	3½	Apr. '77	90	100
Municipal, N.Y..	1,500,000	.....				..	100

‡Paid Irregularly.

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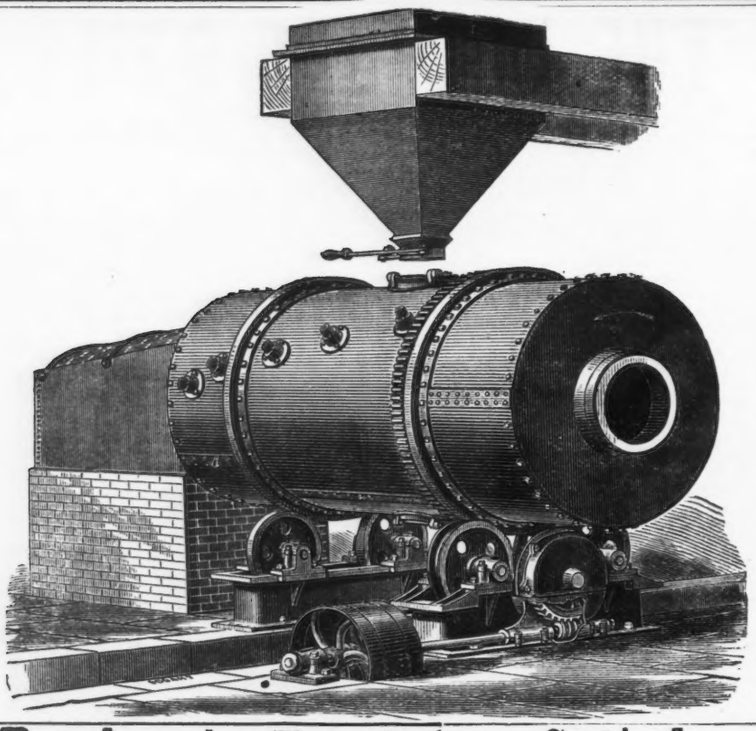

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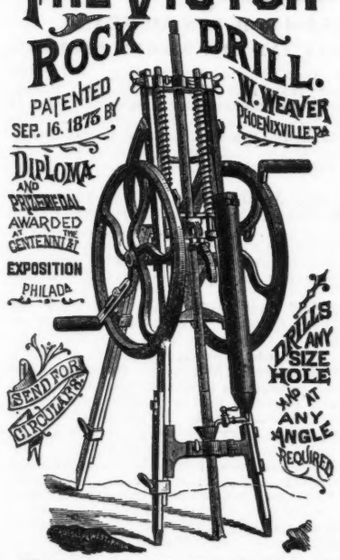
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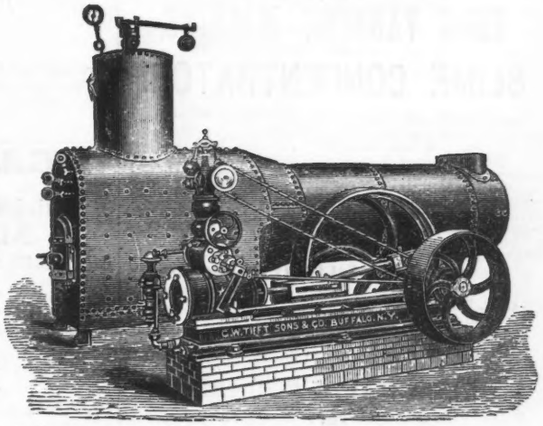

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